

inside

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One of the longest-standing myths about the **NAZIS** rise to power - that it was supported and financed by German big business - is now being seriously questioned. Richard Bessel reviews a new study of the relation between Hitler and the Weimar industrialists (page 14)

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An Essay on Education III

Civic and vocational literacies

Almost 10 years ago the then Prime Minister Mr James Callaghan opened a "Great Debate" about schools with a speech at Ruskin College, Oxford. Ruskin may have been an unfortunate place to launch this initiative in the eyes of those who delight in historical symbolism. For there was nothing in Mr Callaghan's speech to encourage the view that the submerged populist tradition of workers' education represented by Ruskin, liberal in its intentions and politically engaged, should be given greater emphasis. Instead the Prime Minister talked of the need to make education more relevant to the economic life of the nation and to maintain, even restore, traditional standards.

Some have regarded the Ruskin speech as the signal for a counter-revolution, an explicit rejection of the exaggerated liberalism which had been encouraged by progressive school reformers in the previous decade, a kind of grammar schools' revenge. Yet almost as plausible is the alternative view, that Ruskin marked the next stage in the comprehensive revolution, a substitution of a modern curriculum relevant to contemporary social conditions for the watered-down academic curriculum inherited from the old grammar schools. In any case, the debate and its twin themes of relevance and standards have endured; the policy of the present Government and of its controversial Secretary of State for Education and Science Sir Keith Joseph can reasonably be regarded as an effort to implement Mr Callaghan's Ruskin programme.

The focus of education policy has switched from the external organization of schools, the preoccupation of the 1960s at the comprehensive high tide, to their internal organization. As was argued last week, the present pattern of comprehensive primary and secondary schools is not under serious challenge. The one remaining area of institutional fluidity is the tertiary sector; at times it seems improbable that the school sixth form will outlive the century. But present arrangements for the education of 5 to 16-year-olds are unlikely to change. No local authority is going to reintroduce selective secondary schools on a serious scale, partly because of the contrary strength of public and professional opinion but also because the shortage of resources makes it difficult to contemplate running a wasteful system of parallel schools. Nor is there likely to be any significant expansion of independent schools, either through a bigger assisted places scheme or the reintroduction of direct grant schools, or any privatization of state schools through the mirage-market of vouchers.

The action has moved elsewhere. The quality of teachers, the content and intentions of the curriculum, the reform of school examinations - these are now the areas of active policy. Here, not in the organization of schools, is to be found today's volatility. Part of the reason may be that, precisely because the structure of schools established in the 1960s looks so unimpeachable, those who dissent from the values imputed to comprehensive reform must find another arena in which to attempt their counter-revolution.

But a more important reason is that everyone, conservatives and liberals alike, recognizes that the experience of pupils is moulded much more decisively by the practice of education - the subjects they learn, the quality of classroom teaching, the examinations or other measures of achievement by which they are judged and so to which they aspire - than the shape of the institution that contains this practice, let alone the description over the door. In education, as elsewhere, there has been a switch away from a preoccupation with organization to a concern for the culture of schools.

Clearly the curriculum itself is the most important component of that culture. The style of teaching and the

significance, depend upon it because their appropriateness can only be assessed in terms of the curriculum they are designed to express. The favourite post-Ruskin metaphor to describe the school curriculum is "the secret garden". This picturesquely sums up some strong contemporary attitudes to the curriculum: the "secret" bit reflects the occasional discontent with the independence of teachers and dissatisfaction in some quarters with the alleged impermeability of the curriculum to outside influences, whether social or industrial; the "garden" bit suggests the great diversity of knowledge and skills, but in an organized (and traditional?) arrangement, and maybe also a calm and happy detachment from the hurly-burly of real life.

The dilemma of modern education is that it is an attempt to create two quite separate beings, economic man (and woman) and the cultivated citizen. It is dishonest to pretend that the two intentions, and supporting curricular paraphernalia, are the same or at any rate are not in conflict; that the economic achievement of men and women encompasses their civic and personal development; that trainability in skills and liberality in values are identical. Work, of course, remains a central source of social status and personal satisfaction for many people and any form of education that did not place great emphasis on producing school leavers or graduates competent in economic skills would be utterly deficient.

But work and life are not the same. First, more than half the population does not "work" in this narrow sense. They are too young or too old, unemployed, chronically ill or disabled, or responsible for looking after young children. Second, the industrial revolution produced an irreversible separation between work and non-work; it introduced a sophisticated division of labour, income and the bulk of the working population in a centralized market economy, and tended to disenfranchise those who could not easily be incorporated in this economy. Third, 20th century affluence has widened the gap between work and non-work; hours of employment have been reduced and the time has become almost a minority occupation even for those with jobs.

So any curriculum has to contain this underlying ambiguity. It has to try to produce competent workers and good citizens. This has become more difficult now that secondary schools are comprehensive and enrol pupils of all abilities and from all social classes, because these centrifugal intentions have to be balanced within an integrated curriculum. In the bad old days of the two-tier system of grammar and modern schools this difficult but essential task could be evaded. The former offered a curriculum that attempted to provide an education for citizenship, although in practice it was too narrow because the education was academic rather than liberal and the citizenship expressed the culture of a class more than the democracy of a nation; the latter offered a curriculum that confined itself to training in economic skills with only the thinnest of civic or liberal veneers.

It is the academic education inherited from the grammar school that has predominated over the practical education inherited from the secondary modern in the curriculum developed in many comprehensive schools. The reasons are simple enough; the new comprehensives had to try to match the grammar schools in the academic honours game and the old-fashioned utilitarian education provided in many secondary moderns was overdue for liberal reform.

But this understandable bias may have opened the door to a reactionary longing for the curricular simplicity of a two-class school system. In a sense

with his Ruskin speech, although it would be unfair to impute that he would have welcomed the restoration of a divisive system. It also lies behind Sir Keith Joseph's concern that "the bottom 40 per cent" are not being appropriately educated.

There may be a sense in which the twin themes of standards and relevance that have dominated education policy making since Ruskin push in the same defeatist direction. However much effort is devoted to preventing this interpretation by emphasizing "fitness for purpose" and the diversity of excellence, "standards" will be regarded by many as a code for the restoration or reinforcement of the traditional academic curriculum and "relevance" as a code for renewed emphasis on a practical, utilitarian, skills-based curriculum.

Means and ends are inextricably linked in the school curriculum. Its objectives and the methods by which they are achieved cannot be disentangled. One positive outcome of the post-Ruskin climate is a renewed interest in objectives. This has put some backbone into the debate about the curriculum. We no longer regard the curriculum as a hidden agenda that cannot easily be made explicit or, at the permissive extreme, imagine that objectives will emerge spontaneously serendipity-style or from a Rousseauesque environment of natural goodness.

Of course objectives need to be stated with some care. It is not enough to say that the school curriculum must teach skills that are economically relevant. Do we mean down-to-earth training in useful vocational skills that can be applied immediately to the world of work? Or do we have in mind a much broader vocational literacy that provides a blend of skills and attitudes that can survive the increasingly fast turnover of jobs and skills? The first would suggest a return to the old skills-based curriculum, at least for "non-academic" pupils.

However it has become generally accepted that training in detailed skills should not be the responsibility of schools and, because many of those skills are likely to become quickly redundant, such training is often a waste of time and effort.

But if a narrow skills-based curriculum is rejected, the alternative, a curriculum to produce a broader vocational literacy, is difficult to design. Should it try to develop the right attitudes to work at the basic level of industrial and commercial practice, things like good time-keeping and conscientiousness in a team? Or should it concentrate on core skills like literacy, numeracy and basic communication to provide a firm base on which a superstructure of detailed skills and knowledge can later be built (probably on-the-job)? Or should such a curriculum be designed to foster those transferable intellectual skills like the ability to analyse and to argue logically, which are the basis for a successful career?

One answer of course is that a curriculum for vocational literacy should do all three; the least able should concentrate on good industrial discipline, the most able on high-level intellectual skills, and the middle band on core skills. But it is an unsatisfactory answer because it does not recognize that these three objectives point to three quite different curricula: a practical education with few academic frills for the first group; something rather close to the traditional academic/liberal education for the most able; and a core curriculum high in quality but low in variety for the abilities and ambitions is not really compatible with such simple-minded divisions.

The other main objective of schools, to promote civic literacy, also has to be unpicked with care. The main difficulty here is that liberal education, as hijacked long ago

by the 19th century debate, even with our perverse national sympathy for under-dogs and losers, is better remembered. So for most of the present century an academic curriculum heavily influenced by the requirements of our intensely specialist higher education system has had to serve as an uncertain and inappropriate proxy for liberal values.

Yet the two are very different. Academic education is organized around the commanding concept of "knowledge", while liberal education is organized around that of "culture". These two are contrasting ways to recognize truth. This fundamental conflict presents two outstanding difficulties. First, an academic curriculum must give its total allegiance to defining the truth from the false (or, for all you Pupperians, falsifying theories and proposing more credit alternatives). It must accept the division of intellectual labour that is the most efficient means for making distinctions. So its ethos is essentially its character disintegrative.

Liberal education, in contrast, is moral and integrative in its aims. It aims to promote a common culture (not necessarily of course some narrow ethnic, reactionary, Great-Britainism). So when Sir Keith Joseph talks about the role of history in play in creating a communal identity he is straying into that dangerous no man's land between cultural knowledge. Yet his exploration is perfectly honourable intentions; he is merely articulating the tension between an academic and a liberal education which anyone must acknowledge who believes schools should contribute to civic literacy.

The second difficulty is closely related. It has become a truism among teachers and inspectors that the school curriculum should concentrate on the process as much as the product, on what pupils learn as important as what they learn. The argument is that pupils study (1) and a level history to learn about the Tudors or the causes of the Second World War but to learn how to collect and analyse evidence, how to construct an argument and persuade and logical, and so on.

Of course there is a number of objections to this. First, many people like Sir Keith would argue that the study of history contributes to the growth of a common culture, so the content is entirely irrelevant. Second, employers are anxious to know what their prospective recruits have learnt as well as how they learnt it, an anxiety that is reflected to some degree in the Secretary of State's determination to introduce "reference" examinations. Third, the content is far from irrelevant for those who seek to enter higher education, where purpose of so many of our examinations.

But the most powerful objection is that in a society dominated by professional expertise and an economy driven by ever more specialized knowledge and technology knowledge is alive. Already a century ago Aristotle's "sweetness and light" of human culture was overcome by Huxley's dominating imperatives of modern science. How much more unexpected the content has become at the end of the 20th century! Many post-Ruskin developments - the emphasis on standards and relevance, a new concern about the objectives of the curriculum, the attempt to improve the quality of learning rather than to encourage the accumulation of thoughtless knowledge - are welcome. But there is danger that they will be bolted onto a restatement of the old liberal class mind and the 19th century just about to see us through - the 19th century just about to see us through - the 19th century just about to see us through - the 19th century just about to see us through.

Peter Spence

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Review body 'biased'

by Peter Aspdon

The Government has been accused of political bias in its choice of membership of the committee set up to review the role and functions of the University Grants Committee.

The nine-person committee includes Lord Butterworth, retiring vice-chancellor of Warwick University and life peer, Mrs Mary Baker, former chairman of the London Tourist Board and wife of the local government minister Mr Kenneth Baker, and Mr Ian Beesley, head of the Prime Minister's efficiency unit.

One of Labour's front-bench education spokesmen, Mr Barry Sheerman, said the committee's membership was largely based on political patronage.

Yet again the whole basis of membership seems to be "Is he or she one of us?" It is clearly a continuation of the dreadful policies which have led to the current crisis in the BBC," he said. "This will only further embitter the relationship between the Government and those working in the higher education sector."

Both the Association of University Teachers and National Union of Students also reacted with concern to the announcement of the committee's membership.

Ms Diana Warwick, general secretary of the AUT, said: "It is an odd combination of people, and we are worried about any political bias, particularly with the current emphasis on bringing the UGC into the arms of the DES."

"We have been critical in the past of the UGC's apparent inability to fully represent the universities' case to Government, but that will be even less likely if it becomes completely enmeshed by the DES."

Mr Phil Woolas, president of the National Union of Students, said the members' appointments were an example of the Government's "kamikaze tactics" on higher education.

"The only thing holding back the Government at present is that it doesn't have complete centralized control over the universities. What we fear is the introduction of selective funding on a departmental instead of institutional level, which seems to be the DES's objective."

The committee, chaired by Lord Graham, chairman of the British National Oil Corporation, does not include any current vice chancellors, although another of its members is Dr Paul Matthews, former vice-chancellor of Bath University. Mr John Smith, secretary of Imperial College, London, is also included.

Its other members are: Sir Alex Alexander, chairman of J. Lyons and Co; Sir Austin Bide, chairman of Glaxo Holdings and Dr Peter Clarke, chairman of the Scottish Vocational Education Council.

Polys lose out as NAB scraps funding system

by John O'Leary

Polytechnics are to lose the funding advantage they have enjoyed over the rest of public sector higher education for the last two years. The result will be a windfall of at least £5 million for the colleges.

The change may come as early as next year, despite doubts about the feasibility of devising a workable alternative in time. A working group of the National Advisory Body meets next month with a brief to come up with a new system in three months.

The NAB committee is expected to approve a proposal in 10 days' time to abolish the existing system in advance of any agreement on a successor. The search for a replacement for the "sub-quota" system which guarantees a higher level of funding for the polytechnics, has been on for several months. But the NAB board has recommended that the option of treating all institutions equally should be left open for 1986/87.

Alternative allocations using both the old and new methods will be put before the committee in December. But already serious doubts have been raised about the speed of the exercise.

Dr Peter Knight, director of Birmingham Polytechnic, who devised the existing system, said this week: "I can see no conceivable advantage in rushing it through and botching next year's allocation. The sensible time for a change is 1987/88 when the next planning exercise is implemented."

A report by the NAB secretariat acknowledges the potential difficulties. "In short, while there is no intellectually credible argument to

support the continuation of the present methodology unchanged, there is no consensus about what, if anything, should replace it. And the gains and losses in any possible change are too clearly appreciated for them to be ignored as in factors in the argument," it says.

Despite various refinements, any system which funds all institutions on an equal basis will result in the polytechnics losing several million pounds. Exemplifications have been produced for the working group, which show how the worst effects on the polytechnics could be mitigated by keeping back an increased share of the advanced further education pool to support research and linking funding to the proportion of advanced work.

All but four polytechnics were certain to lose money under a range of possible changes considered by the working group last month. In the most dramatic cases, North East London Polytechnic would lose more than £1 million and Birmingham, Manchester, Sheffield, Newcastle, North London, City, Leicester and North Staffs Polytechnics would lose at least £500,000.

The present system was originally considered a liability because it left the NAB open to the charge of hypocrisy in discriminating between public sector institutions while complaining about preferential treatment for the universities. But a more immediate objection is that a number of the larger colleges are effectively dependent on extra support from local authorities which may be unable to keep up their contributions.

Quota bar for law graduates

by Olga Wojtas
Scottish Correspondent

Scottish law graduates may be barred from practice following Government quotas on grants for an essential diploma course.

The one-year diploma in legal practice was launched by the Scottish law faculties five years ago as a prerequisite for anyone wishing to become a solicitor or advocate in Scotland, but the following year the Scottish Education Department imposed quotas on postgraduate awards.

Strong pressure from the universities, the Law Society of Scotland and the faculty of Advocates resulted in a three-year moratorium on quotas while students who had already embarked on an LLB course completed their degrees.

But this coming session only successful honours graduates will be guaran-

teed places, and graduates with three-year ordinary degrees will be competing for grants.

The SED is to award a maximum of 410 grants, and the universities are likely to offer more than 455 diploma places.

A Law Society official warned that the situation was likely to be even worse next year. "All the pressure that could have been brought to bear on the SED has been. We have argued very strongly that this is a professional requirement, and we are all extremely unhappy at the thought that financial means are in any way an inhibiting factor," she said.

Professor Philip Love of Aberdeen University's conveyancing department, and one of the prime movers behind the diploma, said it was impossible to predict the extent of the problem until the results of next month's resits were known.

Small business teaching overlooked, says Sheffield survey

by Karen Gold

The majority of polytechnics and universities fail to recognize the role and importance of small businesses, a report on a survey of business and management courses in higher education reveals.

Two-thirds of the 90 undergraduate and postgraduate courses studied either do not cover small business at all or only fleetingly, the survey by staff at Sheffield City Polytechnic has found. According to the study leader and the conventional large firm perspective. This view was particularly prevalent among the directors of study for undergraduate university courses, with the result that many choose to ignore small firms altogether.

is employed in small businesses and there has been an upsurge of interest in them, the report says. But polytechnics and universities still tend to do no teaching about small business under the subject headings of business policy, economics and marketing, for which the literature concentrates on the problems of large firms.

"Many of the respondents indicated that small business teaching lacks the rigour and academic respectability of the conventional large firm perspective. This view was particularly prevalent among the directors of study for undergraduate university courses, with the result that many choose to ignore small firms altogether."

courses in 21 polytechnics and eight universities, only 13 courses had a specific small business option. A larger number - 19 courses - thought it was unlikely small business would be introduced into the syllabus as a separate element in the future.

Among 34 postgraduate and post-experience courses, more than half offered a small business option, but almost all of these were in the postgraduate specialist courses (MBA/MSc) and very few in post-experience diploma of management studies. Half of the latter also thought an option was "very unlikely" to be introduced.

The reasons for not including a specialist option included statements that students were not interested, lack of staff expertise or too great demands

on staff, and that small business management was insufficiently different from large business to justify separate treatment. (A statement the report specifically rejects, arguing that the problems of small businesses are very different from those of large ones.)

The report has been sent to the minister for small business, Mr David Trippier, together with a call for Government encouragement for small business teaching as in France and West Germany.

Small Business Teaching in Great Britain by Colin Gilligan and Mary Ball, £15, from the department of business studies and economics, Sheffield City Polytechnic, Pond Street, Sheffield S1 1WB.

Teaching places slow to fill

by Patricia Santmelli

There are still vacancies on most secondary PGCE courses - not just in the shortage subjects - and on Bed primary courses, the Central Register and Clearing House, and Graduate Teacher Training Registry revealed this week.

The latest information from the GTTR shows places available on PGCE courses in art, drama, dance, English, French, geography, geology, German, music and Russian, both in the university and public sector, which in previous years had been filled by this date.

The list covering Bed primary courses covers practically every subject from art to Welsh studies.

"It could be just a few places. Basically it is impossible to tell, but we did want prospective students to realize there are still vacancies in these subjects and not just the shortage ones and therefore they should apply. At the moment we are still receiving between 40 to 30 applications a week for 1985," Colonel Massey said.

He pointed out that applications to the PGCE secondary had decreased by

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Letters to the editor

Need for creative thinking

On Sunday, 11 August 1985, Cistercian monks celebrated mass in the ruins of Fountains Abbey in Yorkshire, once the richest and certainly the most beautiful of all the mediaeval abbeys in England. That may not sound remarkable in itself but it was an extraordinary event in the context of history. For it was the first time mass had been celebrated by Cistercian monks at Fountains since the dissolution of their abbey in 1539.

It was celebrated by monks from Mount St Bernard Abbey in Leicestershire, a relatively modern foundation, it was established in 1835 and is now a flourishing community of more than 40 monks, with daughter houses abroad. Twenty of them went to Fountains by coach, clad in their white habits with black scapulars and leather belts. They were various in age, scale and colour - mostly thin, some cadaverous, some bearded, some black.

Apart from the last, they probably looked much the same as the mediaeval monks of Fountains. That abbey was founded in 1132 and within a few years had grown to a community of several hundred, with possibly 500 lay brothers, the unlettered labour force that carried out the bulk of the daily work. The choir monks also did - as they still do - daily manual work, making pottery, printing, carving and above all farming.

It was a bizarre occasion. As if to remind us that the Cistercian order was - and still is - the most austere of all religious orders bar possibly one, the heavens opened in the morning and only closed in the evening after the proceedings were over. Mass could not be sung in the Abbey Church without drowning everyone including the monks, so nearly 3,000 of us crowded into the lay brothers' cellarium. That was impressive if only because the 12th-century cellarium, nearly 100 yards long, with vaulted stone bays on either side of a central row of columns, is one of the greatest single works of architecture in Europe. Even the 18th-century landscaper that transformed the ruined abbey into a spectacular English garden, with lakes and plantations, cannot rival that elemental structure for sheer emotional appeal.

But the ceremony failed to measure up to the scene. I had hoped to hear the monks singing their Cistercian plainsong as they had before the Reformation. They sang only one short anthem. For the rest it was a modern mass in English with a mixed choir, a service the like of which had never been performed at Fountains in its mediaeval heyday.

The present English Catholic mass is almost indistinguishable from its Anglican counterpart, so there was nothing in the service to which a Protestant could reasonably object. In the ruins of the mediaeval abbey it seemed as if the Reformation had been an ironic success. It may be that God wrecked part of York Minster as a comment on the Anglican church's choice of David Jenkins as Bishop of Durham. On this occasion, with suitable symbolism, He attacked us with water rather than fire. Perhaps He was wondering what the Reformation had been all about.

Patrick Nuttgens

Sir, - As graduation time draws near in the colleges of art and architecture, at least two students (one at Dartington and one at the Polytechnic of Central London) who appear to be quite unusually talented, risk failure or "less good" grades or degrees. Multiply this by any reasonable factor to account for talented students nationwide, and it signals a fantastic series of mistakes going back to the Second World War. It seems obvious to students (and here is where I learn) that the members of staff in many institutions are far inferior to those they examine; some tutors attend classes incoherently; others don't turn up; tuition is often absent; advice minimal; avant garde faculty so they say, but fact is that most have not stayed up to date and no retraining programmes exist, either sponsored by unions or institutions. More serious, however, is the fact that for assessing the work of students are not published at all - that is, not available to the students, not in the prospectuses, and not available to the public at large, let alone the Universities Central Council on Admissions, the Council for National Academic

Sale of degrees

Sir, - Your report describing how two of your reporters purchased a university degree for £150 emboldens me to confess that I once did the same thing. Some years ago, I was a research student at the University of Much-Binding-in-the-Marsh (I have altered the name to protect the innocent). In a moment of weakness which I have ever after regretted, I succumbed to the an MA, I read no books, submitted no thesis and took no exams. It cost me, I recall, five quid, and I was not even required to attend the graduation ceremony, which I much appreciated, at home that Saturday afternoon.

You may imagine my shame when students of mine have worked long and hard to obtain MAs under my supervision, while all the time I have been racked by the knowledge that I bought my qualification. I do not know whether the university concerned had a royal charter, but I believe it received a favourable mention from the Pope sometime in the early 14th century.

If there is to be a drive to eliminate bogus qualifications, should it not start with those institutions which have been flogging degrees since the Dark Ages?

Yours faithfully,
GEOFF MARTIN, MA (Cantab),
6 Rochester Terrace,
Edinburgh.

Economic reality

Sir, - As an academic, Mr David Marsland (*THE TIMES*, August 9) really should know better. "Reality" in subjects such as sociology and economics all depends on what side of the fence you are standing. To suggest that all those on the opposite side to Mr Marsland, who do not share his faith in the workings of the market, are guilty of harbouring psychopathic anti-business feelings is something of a distortion.

Agreed, the 364 economists who signed the article criticizing government policy probably did so for a mixture of reasons and motives. Nevertheless, the state of the economy both then and now shows that although they by no means have a monopoly on "reality", they seem to have a better grasp of it than Mr Marsland.

Yours,
ADAM GELDMAN,
117 Divinity Road,
Oxford.

Letters for publication should arrive by Tuesday morning. They should be as short as possible and written on one side of the paper. The editor reserves the right to cut or amend them if necessary.

Awards and the Department of Education and Science; and this has gone on for years. We all want to support creative courses and creative education, in all of the arts, from early childhood, lifelong: are the art and architecture schools doing this? There certainly have been some experiments at St Martins (Inner London Education Authority), now to be merged, and in the North East, but experiments are few and far between.

And now, the art and architecture department simply have not tried hard enough: their standards are low, their aesthetic is often out of date, their students sometimes brilliant, their failure/drop-out rate simply appalling: the figures on the latter are not always published (in the Open University all figures are published, all criteria for assessment are open, and external examiners do not "prop up" the organization).

There is clearly room for more creative thought, in the coming decade, in the OU. But in the colleges of art and architecture, whether universities or CNAAs or still trying to get

Salary revolt

Sir, - It would be a particular pity if any of your readers who teach history or politics believed the main point of Jack Straw's account (*THE TIMES*, August 2) of the top salary revolt in the House of Commons just before the summer recess.

As some may remember, Jack Straw advanced the curious thesis that it didn't matter that 17 Labour Members of Parliament, who had been in the House earlier in the day, missed the crucial vote at 1.45 am because if the Labour absentees had stayed, a number of those Tories who abstained would have voted with the Government.

I suppose that this sort of deliberate balancing act may have happened occasionally during a vote on some minor amendment to a Bill where the two sides have come to know each other's strengths and weaknesses. It is ridiculous, however, to argue that this sort of balance has been struck in any of the major Parliamentary rebellions affecting either of the main parties during the past 25 years.

One of the unusual features of the top salary revolt was the speed with which it blew up. In *The Times* on Monday, July 22, I was reported as being an opponent of the Government's decision to implement the review body's report. By Tuesday evening, the Government Whips had

South Africa

Sir, - The report on action on South Africa (*THE TIMES*, August 9), indicates the continuing desire of academics and students in this country to demonstrate their abhorrence of apartheid. The education here equally extends to assisting the victims of apartheid. One manifestation of this concern to help is Southern African Campus Scholarship Schemes for those who suffer educational discrimination as a consequence of apartheid. Thirty universities in this scheme, together with education and development agencies, raise money to pay for the maintenance of the student and the institution itself wages or pays the tuition fee. Even prior to the latest crisis inside

Fellowships

Sir, - I hope that any woman who saw your report (*THE TIMES*, August 2) on the new scheme of fellowships for women returners to science and engineering and think that they might be eligible will write to me. I would like information on their careers and qualifications, what field universities they can conveniently travel to and how many hours per week they can work.

Yours sincerely,
DAFINE JACKSON,
Dean of faculty of science,
University of Surrey.

accreditation, students are leaving, dropping out, failing, leaving a residue who are "approved", who do not always further the making of a better future, very much; and if one cannot graduate in the belief that one's work will indeed help, with others, to creatively and actively shape better futures, then what is the point of the courses? Comparison of the failure rates with passes in many departments makes a complete nonsense of the admission requirements in the arts and in architecture (portfolio of creative work, audition, or whatever, to prove the applicant is creative).

At the OU, we assume all students are creative and no portfolio or audition is necessary. It is very sad that the counterparts to the OU have not put their houses in order, and that they have not realized that this can be done at low cost, and very many lessons learned from the students, as opposed to the so-called intellectual elite comprising the faculties.

Yours sincerely,
SIMON NICHOLSON,
Chair, art and environment,
The Open University.



Jack Straw: party line

made their own assessment. It is no secret that the Government Whips really believed that they faced defeat. They then reacted more strongly than at any time that I can recall in the last quarter of a century.

The Conservative Whips could not have known that so many Labour and Alliance members would not be asked on television and on radio whether I thought that the revolt would be successful. I said that the one certainty was that the Parliamentary Labour Party wouldn't turn up. I was right - unfortunately.

Yours faithfully,
PHILIP GOODHART, MP,
House of Commons.

Teaching places

continued from front page
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In maths and chemistry, the position is similar with 23 universities and 18 colleges and polytechnics and 20 universities and 11 colleges and polytechnics still reporting vacancies. By comparison, the number of reported vacancies in business studies - one university and five colleges and polytechnics - and in craft design and technology - three universities and eight colleges and polytechnics -

Eysenck under fire

Sir, - I am at a loss to find the reason, literary or scientific, for J. Eysenck's letter (*THE TIMES*, August 9) to the Royal Society of Medicine. He consigns Freud's work to the realm of "literary people, minor teachers, social workers, and outcasts" and others who have not out having any proper psychological training. Is this reasoned argument just good old-fashioned prejudice?

What does he mean by "psychological training"? The vague tautology renders it meaningless. Eysenck's letter is over, has Professor Eysenck been to check on the psychological training current in the professions he is implicating, views with such evident beyond the pale of "scientific interest"?

Of course, all zealous scientists take it as read that mere "artistic" or "literary" people are incapable of "serious" psychological work. He says "leading psychologists, philosophers of mind and others" (who are ubiquitous in the world) "who have seriously concerned themselves with the Freudian opus". Yet more tautology: one of the few scientific "goddies" of the "buddies".

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There is also concern that the university is likely in the future to retreat into concentration on its main faculty study areas, because of financial constraints. Though the U courses cross faculty boundaries, each is the responsibility of a particular faculty which also carries responsibility for funding.

Fears are being expressed in particular about the future of the women's studies course because it is scheduled to be rewritten in 1988. There is also concern that the OU should be considering withdrawing from women's studies at a time when there is considerable expansion in conventional higher education institutions.

Women's studies is offered as a half-credit course, along with conflict and security in the nuclear age.

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Architecture closures condemned

by Staff Reporters

Proposals to close four schools of architecture and merge others were heavily criticized last week by the institutions concerned, unions and professional bodies.

The most vigorous opposition came in Northern Ireland, where the proposal to close the Queens University school prompted protests from the vice-chancellor, the Association of University Teachers and the Royal Society of Ulster Architects.

They have started a full-scale lobbying exercise to avert the "drastic blow" such a step would be to architecture in Ulster and to prevent the loss to the university of 30 new students each year, as well as 15 teachers and seven other staff.

All architects in the province are being circularized and asked to state

their connections with Queens. Other letters have gone to all practices, inviting comments on the difficulties in recruiting architects. The replies will be made into a dossier and presented to the Architectural Intakes working party, along with the many messages of support already received.

The Queens vice-chancellor, Sir Peter Froggatt, has arranged to be the chairman of the working party. Professor Martin Harris, on September 17 after which he will convene and chair a meeting to compile the university submission on the report, strongly opposing the closure.

The Belfast branch of the Association of University Teachers deplores the about-turn made by the architects intake group which, appointed in September to select schools for merger or closure, initially used location as its chief criteria; but

when the National Advisory Body insisted that one school to close should be in a university, it switched to the standard University Grants Council yardstick, the AUT claimed.

The report recommends that in Scotland, Edinburgh University and Edinburgh College of Art should collaborate on intakes and consider merging their two schools. But Dr John Burnett, principal of Edinburgh University, condemned the report as "pretty half-baked".

He agreed there was an over-production of architects, but the best way to regulate numbers was at the point of entry to the profession, not to higher education courses.

Edinburgh would seek clarification from the UGC about the report since the university had recently increased its first-year intake on UGC advice.

The Royal Institute of British Architects will present its response to the report's recommendations, after its educational and professional development committee has considered them in early October.

Inner London Education Authority officials are preparing a report in response to the recommendations. This will go before a sub-committee after the summer recess, and examines the closure options proposed. These are that one of the ILEA's four architecture schools, housed at central London, North London, Bank and Thames polytechnics, should be shut down.

North East London Polytechnic is "appalled" at the proposal to close its school of architecture, and has thrown the recommendation back at the NAB for reconsideration.

Cash crisis threatens OU courses

by Maggie Richards

A group of special multi-discipline courses offered by the Open University may be under renewed threat because of the university's financial crisis.

Fears have already been expressed about the future of one of the most popular of the "University" courses currently available, dealing with women's studies.

The U courses were originally established to offer students an alternative to programmes of study within the rigid faculty system. Each topic is examined from a variety of academic standpoints.

Officially the OU gave its full support last year, through the senate, to the continuation of the courses after doubts had been expressed about their future. But now it appears they may again be under threat because of staffing problems.

Many of the staff employed on the U course programme are on short-term contracts, and their posts are more likely to be terminated when their term ends.

There is also concern that the university is likely in the future to retreat into concentration on its main faculty study areas, because of financial constraints. Though the U courses cross faculty boundaries, each is the responsibility of a particular faculty which also carries responsibility for funding.

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Women's studies is offered as a half-credit course, along with conflict and security in the nuclear age.

Archaeologists from St Andrews University have made a stirring discovery during their underwater excavation of a Bronze Age dwelling in Loch Tay.

Their latest finds include a porridge spoon from Oakbank Crannog, one of the artificial islands built more than 2,500 years ago in Scottish lochs. The peaty water has been crucial in preserving the prehistoric site.

The team is headed by Dr Nicholas Dixon of St Andrews' Institute of Maritime Archaeology, seen here with another discovery, one of the support timbers for the platform on which the dwelling was built.

"The wooden spoon found this summer was probably used for stirring and serving the family porridge and stew," he said.



Two-year YTS 'will scare off employers'

Employers will halve their intake of trainees if a two-year Youth Training Scheme is introduced, the Institute of Manpower Studies claimed this week.

Its report, based on a study of 12 large companies with a total of 390,000 employees in manufacturing, financial services and the public sector, says this is mainly due to the prospect of committing staff and training resources over two years.

"Many companies expressed concern over its implications, such as the increased likelihood of job substitution and as to whether trainees could cope with a more demanding scheme," the Sussex University-based institute says.

The report, by IMS research fellows Stephen Bevan and Rosemary Hutt, also reveals that each company believed that despite a confused and

shaky launch the YTS was shaping up to a creditable scheme.

But companies still regarded off-the-job training by further education colleges as unsatisfactory and as a result were conducting their own in-house training.

"This was largely because companies felt that colleges had low commitment to YTS while charging them high tuition fees, and that the college system too closely mirrored the school system which many trainees had rejected," the authors say.

Companies felt the YTS certificate was of dubious value and tantamount to a "badge of failure", as all worthy graduates would have already been snapped up by employers.

"It was felt that it did not contain the correct type of information, was laborious to complete, did not do justice to a whole year of training, was too

subjective, took too long to fill and did not do an effective selling job."

On the credit side, the report says that the YTS had changed companies' attitudes towards selection. It encouraged organizations to examine how much importance they attached to academic qualifications as a predictor of future work performance. The consensus was that exam results were a poor indicator.

The authors point out that the YTS also seems to be changing attitudes towards training, with managers and supervisors who had not previously had responsibility for this activity finding it very rewarding.

Company Perspectives on YTS - IMS Report No 104 by Stephen Bevan and Rosemary Hutt, £7.50 plus 75p p&g, from the Institute of Manpower Studies, Matelli Building, Sussex University, Falmer, Brighton BN1 9RF.

The iceman surviveth...

Scientists at the London Hospital Medical College this week made a 23-year-old Icelandic fisherman relive a remarkable ordeal which, they admit, would have killed almost anyone else.

They immersed Gudlaugur Fridthorsson in a bath of ice-cold water, in an attempt to recreate the conditions of his extraordinary swim for survival last year in water of 5 degrees centigrade - a temperature which would have killed most people from hypothermia inside an hour.

Mr Fridthorsson was one of five crewmen who were thrown into the water when a fishing boat capsized suddenly in Icelandic waters. Two men died almost immediately. The other three sat on the boat's up-

turned keel for 45 minutes, before deciding to swim for shore.

Within just 10 minutes of starting to swim, two of the remaining three were dead.

But Mr Fridthorsson carried on, for more than five hours, until reaching a deserted shore.

"It was a remarkable feat by any standards, and he has become the first person to have survived such exceptional exposure to cold and to be investigated scientifically afterwards," said Professor William Keatinge, head of the college's hypothermia laboratory.

An apparent reason for Mr Fridthorsson's survival, according to Professor Keatinge, was his size: six foot three and nearly 20 stone...



"NOT ANOTHER RESEARCH TEAM FROM LONDON UNIVERSITY!"

SERC seeks foreign backers for neutron plant

The Science and Engineering Research Council hopes to conclude negotiations soon with foreign subscribers to the new Spallation Neutron Source at the Rutherford Laboratory, Oxfordshire, to secure the running costs of the machine.

The council urgently needs more money to exploit the full potential of the machine, which cost £50 million to build. If negotiations succeed, the proposed European Synchrotron Radiation Facility, which the council would like to join, and the existing Synchrotron Radiation Source at

Daresbury in Cheshire. The four facilities, two X-ray and two neutron sources, offer a strong European base for much research in chemistry, physics and biology - if the right terms can be reached for joint use.

So far, there is talk of the Italians agreeing to pay a fifth of the running costs of the SNS, with a similar contribution likely from the French in return for support for the European Synchrotron Source. The Germans are considering their position after the recent cancellation of plans for a German neutron source at Ullrich. If all three agree to contribute to the SNS, a

MoD to boost research

by Jon Turney
Science Correspondent

Ministry of Defence research planners are keen to increase co-operation with university scientists on military technologies.

Areas currently under discussion extend beyond the new collaborative grants scheme with the research councils - disclosed last month - to more support for joint university-industry work, and even possible co-funding of "big science" facilities.

MoD funding for university research is set to rise from the current level of £9 million a year to around £15 million. This could well increase further if what a senior MoD official terms "an improving relationship" stimulates enough demand.

Arrangements are now being finalized for the joint grants scheme with the research councils and universities will be sent a brochure next month telling them how to apply. Academic researchers will be invited to consider a list of strategically important research areas and indicate whether their work might be relevant.

The areas will include new sensors, signal processing, solid-state physics and gallium-arsenide for electronics, software engineering, strategic engineering materials, acoustics and sonar.

Applicants will have their work vetted by the MoD for defence relevance. The research councils will then be told whether the ministry is prepared to meet half the cost before proposals are peer-reviewed in the normal way. In exceptional cases, grants not approved by the councils may still be picked up by the ministry, which will then pay the full cost.

The MoD currently funds around 650 projects in universities, worth £9 million a year. Some of this money will be diverted into the joint grants scheme and this, together with £2 million of new money, will make an initial £5 million a year available from the defence side.

The ministry also plans to provide around £4 million a year to encourage joint research proposals between universities and industry. In this initiative, prompted largely by the success of the much larger Alvey programme for computer research, the academic costs will be met in full by the MoD. More cash will be available if the scheme takes off.

The ministry is also talking to research councils about improving access to defence research facilities. Treasury rules would mean payment was needed, but there may be an arrangement for charging marginal costs to interested academic workers.

Possible candidates include wind tunnels, microelectronics fabrication facilities at the Royal Signals and Radar Establishment at Malvern and optics and laser devices.

There is also MoD interest in coordinating major programmes of work in areas like oceanography, where it is felt academic theory and MoD resources for seaborne observation could be complementary. There are preliminary discussions on identifying areas of "big science" where common facilities would help civil and defence research.

The ministry wants to widen the scope of links between military and civil research because, according to MoD officials, "more and more, enabling technologies in defence are common to civil projects". New developments in electronics are singled out as the most prominent example.

number of small European nations are likely to follow suit - and there is some interest from Japan.

An additional reason for working for an agreement is fear on the British side that Government action on the recommendations of Sir John Kendrew's recent report on high energy physics might jeopardize new collaborations in big science. Any move to withdraw SERC funds from particle physics work at the European Centre for Nuclear Research (CERN) in Geneva could weaken Britain's position in talks trying to raise cash to run domestic facilities.



Patrick Nuttgens: distinguished

Nuttgens to retire next year

by Karen Gold

Dr Patrick Nuttgens, director of Leeds Polytechnic since its foundation in 1970, is to take early retirement.

Dr Nuttgens, 55, will step down once his successor takes up the post either at Easter or next summer. He is retiring because of ill health.

"The decision came as a result of a long discussion between the Council for National Academic Awards, the director of education (in Leeds) and myself," he said. "In the course of the last year I have been finding it very difficult to get around."

"The poly would be better off with someone a good deal more mobile. There are going to be all sorts of things happening in polytechnics in the next few years, so it's important to have a director who can go to all the meetings."

Dr Nuttgens, a *THESE* columnist, intends to write several books and will continue writing for newspapers and television.

The chairman of Leeds Polytechnic governors, Councillor Bernard Aiba, said Dr Nuttgens was the most distinguished polytechnic director in the country.

"He will leave us a testament to his work: a fine academic institution which is an integral part of the city and which has made a significant contribution to its economic and cultural life," he said.

Sir Keith told of adult educators' family role

An outline of the role adult educators play in family education, focusing special attention on their work in the community, has been submitted for Sir Keith Joseph.

The document, from the National Institute of Adult Continuing Education, is in response to Sir Keith's own comments at the institute's annual conference in April, when he expressed concern about the issue but confessed he knew little of the work being done in the field.

The reply to Sir Keith from the institute's director, Mr Arthur Stock, emphasizes that many schemes already exist which involve cooperation between adult educators, schools and welfare agencies to help parents in

deprived areas appreciate the value of their children's education.

Much of this work takes place away from traditional centres for learning, Mr Stock says.

"The image of adult education as already well educated enough to be able to make informed choices, are have no inhibitions about entering educational establishments, has only been partly true and visible in some parts of the service at some time. Family education is one of the many areas of work with adults where this image is now very far from reality."

The institute's response also points out that there is no marked difference in the importance parents from a variety

of socio-economic groups attach to their children's education. The difference is in the ability of the parents to pass on skills which aid their children in school.

The institute details some examples of the different types of family education programmes already taking place, and invites the Secretary of State to visit some of them and talk to staff.

Finally, the response quotes the feelings of an adult education principal project. "In September we had a collection of isolated individuals for whom education meant little more than a word; we now have a group of mothers for whom education is beginning to be an integral and vital part of their and their children's lives."

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MSC training policy attacked

by Patricia Santinelli

Warwick University academics have strongly criticized one of the foundation stones of the Manpower Services Commission training policy - occupational training families - as not promoting transfer of learning.

Writing in a report, *Transfer of Learning and Training*, commissioned by the MSC itself, Mr John Annett and Mr John Sparrow from Warwick's psychology department say: "We find no basis in the psychological literature for expecting greater transfer of training between jobs within the same occupational family than between those which have been classified as belonging to different families beyond what could be expected from an empirical determination of common elements."

"Moreover occupational training families might even have an undesirable blurring effect if people who have received training within one OTF were to regard themselves as unsuited to work in another."

The concept of OTFs and their use in the Youth Training Scheme was put forward and formed the basis of a report in 1983 by Mr Chris Hayes, a fellow of the Sussex University-based Institute of Manpower Studies.

The report added that on the basis of work carried out so far there is as yet no entirely satisfactory way of group-

ing or classifying skills which would enable one to predict transfer with any degree of accuracy.

"Therefore although skill inventories and job profiling techniques are being developed in certain job areas, there is an urgent need for further development. Objective job information is necessary if sound advice on transfer is to be offered to trainees, trainees and job seekers," the report says.

It points out that a considerable investment in research would be necessary to develop a suitable database, but the objective methods which this would make possible would be infinitely superior to the intuitive judgement which is all that can be offered at present.

The authors propose a new way of looking at transfer in which human skills are thought of as governed by "plans" - a kind of flexible recipe for producing behaviour appropriate to specific purposes in any appropriate environment.

"Learning a new task or skill involves assembling a new plan. It may be that the new plan has the same general structure as the existing one but is different in some of its details. For example when you change the model of your car the overall technique of driving remains much the same but the controls and handling may be

different, so that the overall driving plan has to be modified," the report says.

Doubts as to whether local authorities will be able to absorb twice the number of trainees as proposed under a two-year Youth Training Scheme, were expressed this week by the Local Government Training Board's division coordinator.

Writing in the LGTB's newly titled newsletter *Training for Transition*, Mr Vic Emery says that there may well be a revision towards taking only those who wish to recruit and train for specific occupations.

"The reason for this is that 'additionality' is no longer a condition of grant, and it is difficult to show local authorities will wish or could afford to take on trainees above the numbers required by local government," Mr Emery says.

Mr Emery warns too that the intention to have only one made in YTS could affect the further education sector, since it is a major provider of Mode B schemes - due to be phased out.

He adds that if numbers are maintained or grow as hoped, the further education system will be under further pressure and will find it difficult to respond in time to meet an April 1986 start date.

Literacy 'needs training'

by Maggie Richards

After 10 years, adult literacy and basic skills teaching has become recognised as an adult education discipline in its own right. But an essential task now is to create a sound training strategy, according to a report published this week.

Without comprehensive and effective training programmes, the effectiveness of the service to respond to changing needs and meet the needs of staff, including volunteers, would be seriously impaired, says the report *Training in Adult Literacy and Basic Skills*.

The increasing diversity of provision, methodology and organization has imposed new demands on staff, made development of new training policies essential.

The report looks in depth at the planning of a coherent training programme, and suggests ways of facilitating the sharing of ideas and expertise. It also examines a range of techniques to vary the style and pace of courses and provide a varied selection of approaches.

"The report has been produced by the Adult Literacy and Basic Skills Unit, which this autumn will embark on a new campaign to celebrate its tenth anniversary."

In 1975 the first literacy campaign was launched with the aim of helping an estimated two million adults with reading and writing difficulties. So far, 350,000 people have been assisted and the campaign has revealed other needs for numeracy, tuition, bridging courses, and skills-based literacy.

Next month a new newspaper advertising campaign will begin, backed by a series of public service announcements on independent television channels.

The BBC is to broadcast a 30-minute programme on September 1, celebrating its own contribution to the adult literacy campaign, the award-winning series *On the Move*.

Training in Adult Literacy and Basic Skills, published by the Adult Literacy and Basic Skills Unit, Kingbourne House, 229 High Holborn, London WC1V 7DA. Price £1.

Centre names first head

Dundee University has appointed Dr Donald Bligh of Exeter University as the first director of its new centre for continuing education.

Dr Bligh, who is currently director of Exeter's teaching services centre, does not take up his professional post until the new year, but the centre itself will be launched at the beginning of the new session.

The centre will amalgamate the work of Dundee's department of extramural education, whose director, Mr Alex Robertson, retires at the end of this month, and of the department of education, whose future was threatened last session.

Dundee has left the chair of education vacant for several years, and then lost another three staff members. But last winter the senate agreed that the department's work should continue in the new amalgamated centre, safeguarding the posts of the two remaining academic staff.

An important concern of the new centre will be to develop the potential market for post-experience vocational education. Dr Bligh last year undertook a survey for Exeter on the demand for continuing education from employers and the public in the South-West of England.

He has been director at Exeter for the past 10 years, and began the first study counselling service outside the university as well as initiating a national telephone information service on higher education.

He has also established an MA degree in decision making in higher education.

overseas news

Hundreds of students held in South Africa

from Susan Fleming

JOHANNESBURG

Hundreds of university and school students have now been detained under South Africa's emergency regulations. Rank and file members of the Congress of South African Students and Youth Groups have dominated the detention lists.

Opposition to the state of emergency has been strongly voiced by tens of thousands of young South Africans. Widespread school and university boycotts have been a common form of protest since the state of emergency was announced on July 20. In some areas more than 80 per cent of the schoolchildren have stayed away from classes.

The areas most hard-hit by boycotts have been the East Rand, the Eastern Cape and the Cape Peninsula where tens of thousands of pupils have been boycotted.

In certain areas a curfew has been placed on black pupils forbidding them to be outside educational institutions between 8 am and 2 pm on school days unless they have obtained permission from a member of the security force.

Schoolchildren as young as 15 years old have been detained and scarcely any of the parents of the hundreds of detainees have seen their children since.

The General Secretary of the Azanian Students Association and the President of the University of the Witwatersrand's Black Students' Society, Mr Chris Ngobho, said the state of emergency had been declared with the aim of crushing popular resistance in South Africa.

"We have turned our universities and schools into flashpoints of freedom by demanding democratic student representative councils and the expulsion of racist lecturers," said Mr Ngobho. Despite the state of emergency, Mr Ngobho said students continued to fight heroic struggles

against the agents of apartheid. More students supported community struggles such as the consumer boycott, he said.

The Azanian Students' Association and the Congress of South African Students have joined the call to boycott white businesses in protest against the state of emergency.

Many of the protests and demonstrations against the state of emergency have met police hostility.

A demonstration at the University of the Witwatersrand was stopped when police charged on to campus wielding sjamboks (whips) and firing teargas. More than 40 students were injured in the charges. Eight students were arrested and released four days later.

Wits students initially responded to the arrest of fellow students by demanding the closure of the university until the students were unconditionally released. This request was refused by the Vice-Chancellor and Principal, Professor Karl Tober, who urged students to return to classes.

Mr Grant Rex, the President of the Wits Student Representative Council, deplored police actions, adding that it was not the first time students had been attacked by police.

"We were holding a peaceful demonstration which resulted in serious violence on the side of the police. We were not a so-called bunch of radical students who had to be calmed down," he said.

Students from the University of Cape Town were also attacked by police as they attempted to march from the campus to the State President's home.

A spokesman for the National Union of South African Students, to which most English-speaking campuses are affiliated, described the state of emergency as an attempt to crush the United Democratic Front and any other group in opposition to the government.



Police with sjamboks attempt to break up a protest march by students at the University of Cape Town.

He said that NUSAS did not believe that the state of emergency would solve any of the problems facing South Africa.

Several NUSAS members have been detained under emergency regulations and these include a former president, Mr Auren Van Heerden, Ms Sue Lund and Ms Sheila Drew.

One student group which supported the State President's decision to declare a state of emergency is the Afrikaanse Studentebond (ASB), to

which all Afrikaans-speaking campuses are affiliated.

Mr Marthinus Van Schalkwyk the President of the ASB, said although he supported the state of emergency it should operate on two levels.

"It should bring about law and order, but serious negotiation between the people of South Africa must not be ignored," he said.

Mr Van Schalkwyk said the frustration of black people could not be solved without negotiation.

Bretons get teaching qualification

from David Dickson

PARIS

The French government has announced the creation of the first professional teaching qualification in Breton, the language spoken by almost a million people in Brittany. If the experiment is successful it may be extended to other regional languages, in particular that spoken by the Basques on the Spanish border.

The government's decision is part of a package of measures designed to support regional cultures, a promise originally made by President Mitterrand in his 1981 election campaign.

The new teaching qualification is being introduced largely under growing pressure from university students following courses in Breton who want to become schoolteachers.

Successful candidates will be required to pass a two-part examination, one requiring a detailed knowledge of the Breton language, culture and history, the other requiring comparable competence in a conventional teaching area, such as history and geography, modern languages or mathematics.

This appears to be a compromise between the minister of culture, Mr Jack Lang, who has been enthusiastically promoting regional causes, and the minister of national education, Mr Jean-Pierre Chevènement, who has expressed his hostility to demands for more regional power.

The result, according to the ministry, will be the creation of fully qualified Breton teachers who will be able to meet situations "in which their career leads them to take up teaching positions in non-Breton-speaking regions".

The government's announcement, which also included the creation of a Regional Languages and Cultures, has been warmly welcomed in Brittany. But the reception has been cooler in the Basque region of France, which has been pushing similar demands.

Last year, President Mitterrand promised that the government intended to create an inter-university department of Basque studies. But so far no further announcement about this has been made, nor has the government given its approval for a qualification in the Basque language

Union pleads for native ability

from Geoff Maslen

MELBOURNE

Are there too many foreign cackons in Australia's academic nests? The Federation of Australian University Staff Associations thinks there might be.

The association believes that many highly qualified Australian graduates are not able to find long-term tenure employment in Australian universities because up to a third of all new teaching jobs are taken up by foreign academics.

Since 1983, FAUSA has been concerned that overseas academics have continued to come into Australia with very few restrictions when the number of new university jobs has declined dramatically.

Two years ago, the association adopted an academic selection policy intended to give some employment preference to Australian applicants. The idea was that institutions would try to ensure that an overseas academic (someone not an Australian citizen and not entitled to permanent residence) was only appointed to a lecturing post if there were no suitable qualified Australian applicant.

According to FAUSA, such procedures would reduce the likelihood of discrimination against Australian nationals in university employment, while remaining consistent with the

principle that academic appointments were still made on the basis of a person's scholarship and standing.

There has long been concern on some Australian campuses that university selection panels operated on a kind of "old boys' network in which Oxbridge-educated incumbents, say, tended to choose newcomers from their own universities, rather than an equally well-qualified Australian from a local brown-brick institution.

The vice chancellors of Australia's universities have rejected such charges. They have largely ignored FAUSA's policy calling on them to set up an appointments review panel that would require a selection committee to justify the appointment of a foreign academic.

Irritated by the vice chancellors' stand, the association earlier this year suggested a meeting between the two groups and the Commonwealth Tertiary Education Commission - the federal body that distributes government funding to Australian higher education institutions.

When this generated no response, FAUSA wrote to the Australian Council of Trade Unions - of which the association is now an affiliate - asking for help. The ACTU contacted Senator Ryan, the Minister for Education, and almost immediately the Tertiary Education Commission organized a

meeting. But the vice-chancellors refused to attend. They were horrified at the thought of the ACTU meddling in university affairs.

Instead their representative body, the Australian Vice-Chancellors Committee, wrote to the Prime Minister, arguing that Australian Universities needed overseas academics for their expertise and the experiences they brought with them.

Mr Les Wallis, the General Secretary of the FAUSA, condemned the vice-chancellors' decision. He said figures compiled between 1981 and 1983 showed that on average almost 30 per cent of all new appointments to lecturership positions in Australian universities were filled by academics whose first degree was gained overseas. The proportion varied from less than 10 per cent at Newcastle University to nearly 44 per cent at La Trobe University.

"We are not trying to put Australian choppers ahead of foreign geese," Mr Wallis said. "We are merely suggesting that where all things are equal, Australians should be appointed."

Mr Frank Hamby, the Secretary of the Australian Vice-Chancellors Committee, said: "It may be the matter can be resolved by universities ensuring that FAUSA has a representative on selection panels."

Japanese opportunities

from Geoffrey Parkins

KUALA LUMPUR

Plans are now under way to increase educational opportunities for Malaysian students in Japan, Malaysia's education minister, Datuk Abdullah Ahmad Badawi, announced this week.

He said that to ensure the success of "look East" programmes between the two nations, especially those requiring closer cooperation in the field of education, the Japanese government was planning to increase its intake of students from Malaysia and other developing countries.

In the same week, Mr Badawi also had a meeting with a nine-member education mission from Australia. This had reassured him that Australia would continue to provide previously agreed educational arrangements despite its recent fees increase.

Mending the town and gown rift

from William Norris

WASHINGTON

The universities of America are coming out of the closet. Across the country, colleges which once regarded themselves as virtual city states, cut off from their surrounding communities by mutual antipathy, are now mending the divisions between town and gown.

They are building housing projects, aiding the elderly, tutoring students, running soup kitchens and providing the backbone for community blood drives.

They call it community activism, and it is tending to disprove the popular theory that the student of the 1980s is politically apathetic and conservative when compared with his or her forerunner of 20 years ago.

Harvard University law students taking courses in taxation are helping local residents prepare their tax returns free of charge. Other Harvard volunteers are going into Boston's inner-city schools to help disadvantaged youngsters learn to read. And in the Mexican-American barrios of Redwood City and east Palo Alto, California, students from Stanford University are providing a legal clinic and a social services programme.

It is in the public state school system that the universities' new policy of involvement had been most marked, reversing a policy of benign neglect which persisted throughout the 1970s. The former "schools of education" which adopted fancy new titles and went waiting off into the fashionable reaches of psychology during the past decade, have now decided that the schools on their doorstep actually matter.

Few have gone as far, however, as Boston University, whose president last month made an offer to take over the city's troubled public school system, lock, stock and barrel, and run it more efficiently. His gesture was declined.

At Harvard, the involvement is less dramatic. A "principals' centre" brings school heads on to the campus for meetings and workshops, while a separate educational technology centre takes the university into classrooms in four school districts. A separate programme teaches writing in the Cambridge public schools.

Sacked professors take fight to court

from Bernard Kennedy

ANKARA Dozens of Turkish university teaching staff including several professors sacked by the martial law authorities over the last two years are now engaged in a fierce legal battle to get their jobs back. With martial law now replaced by a "state of emergency" in most parts of the country, it looks as though they may be successful — not that the university authorities are welcoming them back with open arms.

For although the professors and lecturers involved — mainly left-wing intellectuals — were removed from their posts by the martial law authorities, it is generally believed that the initial idea came from university administrators seeking to disperse opposition to the centralizing Higher Education Council set up in 1981 and strengthen the position of the right on the campus.

It was convenient for the HEC and its appointees to bring in the martial law commanders, since this meant no compensation and no right of appeal. It also meant that the dismissed were

banned from all forms of public employment for life.

It is this last ban which the victims of the purge are contesting. No sooner had martial law been lifted than a group of professors from three of Ankara's universities petitioned for reinstatement. Weeks passed, and they received no reply. Higher Education Council president Professor İhsan Doğramacı announced that he was leaving the decision in the hands of individual rectors.

Mr Cahit Bıyık, governor of Ankara province commented that a return to work was possible but that he had the power to exile undesirable individuals — and then confused matters by saying that the courts would have to decide.

Professor Sermet Akgün, rector of Izmir's Aegean University, said the issue had not been discussed by the rectors. In any case, he expected applications would be made directly to the HEC. The rectors of all four of Ankara's universities, the ones most affected by the debate, maintained a deafening silence.

The first breakthrough for the martial law victims came in the civil courts, which ruled that various individuals had the right to be reinstated. And when Ankara's Çizirgi University failed to implement such a decision in the case of a former lecturer Dr Eğin Gülpınar, the high court gave her permission to claim damages.

The government had already angered Turkish students. In spite of assurances to the contrary given by both education minister M. Veli Dincerler and the HEC president, it has decided to raise tuition fees by 100 per cent — a figure well above even the most pessimistic inflation forecasts.

Described by opposition politics as "rendering higher education nothing more than a dream" for those in low-income groups, the move was defended by prime minister Turgut Özal on the grounds that the new fees were still lower than those payable in other countries.

The fees now range from 40,000 to 120,000 lira (£53 to £160) per annum. The minimum wage in Turkey is some 25,000 lira per month. Students will

still be able to borrow the money to pay their fees, albeit under a more complicated system.

This is only the second year that tuition fees have been charged at Turkey's state-owned universities, and the topic remains controversial. Originally intended to be nominal and defended as an incentive for students to work hard, the fees now seem to have become a significant element in the financing of higher education, amounting to over 5 per cent of the total budget for higher education in 1984-85.

By law, money collected from students in fees has to be used to provide accommodation, transport, sports facilities, etc. for students. The coming academic year will show whether the law is in fact being complied with in this respect.

Non-Turkish students at Turkey's universities have to pay five times the fees levied on their Turkish counterparts. Foreign students' fees have been raised to between £250 and £300 per year.

Avenue to a white collar

Richard Yelland's eastern trip takes him on to Kathmandu

Entering Nepal by land from India is a stark contrast to the Tera, an extension of the Ganges plain, is just as hot, dusty and flat as Northern Uttar Pradesh — but the relatively uncrowded streets.

With an estimated 15 million people to 140,000 square kilometres, Nepal's population density is half of its neighbour. But there is some hope since rapid population growth (currently estimated at 2.7 per cent annum) is at the root of its pressing problems.

Mass education has only since 1951, when King Tribhuvan overthrew the oligarchic Rana regime. Many adults have had no formal education, and adult literacy is a mere 25 per cent (and considerably lower for women than for men). As the number of schoolchildren increases, pupil/teacher ratios rise to primary schools from 25:1 in 1971 to 38:1 in 1981 and the pressure on teachers is exacerbated by shortages of textbooks and lack of space.

There have of course been rapid significant developments in the past years. Nepal has been a member of the United Nations since 1955 and has become ever more open to international technology and influence from both east and west. The Himalayas, which make communication so difficult, are at the same time a magnet for the world's mountaineers, trekkers and tourists, and tourism is Nepal's largest foreign exchange earner.

Education, which in the 1970s accounted for 4 per cent of the national budget, accounts for about 9 per cent of the national budget — but it implies an outlay of only 35 per cent of the total. About two-fifths of educational expenditure (and the greater part of aid) goes to higher education, which in Nepal means Tribhuvan University.

The university has 110 campuses and 50,000 students (about 28 per cent of the 16-22 age-group) in its 10 teaching institutions. A very high percentage of those who pass the School Leaving Certificate, the culmination of the 10 years of primary and secondary education, go on to the university, seeing it as the only avenue to the sought-after white-collar jobs. Despite several attempts to offer technical and vocational education elsewhere and the realization that trained manpower is the key to industrial development, the low status attached to manual work has not been overcome and graduate unemployment is on the increase.

Tribhuvan University is centrally administered: many campuses are physically detached from the decision-making process and communication is difficult, but the advantages of central management should lie in uniformity of standards and equality of treatment. University education consists of three stages, usually of two years each: the first (intermediate) follows on from the SLC, which is no higher than O level standard, the second leads to the Bachelor degree and the third to the Master's degree.

The teaching institutes have a considerable degree of independence but every student has to take three compulsory courses — English, Nepali and "an introduction to Nepal". There are plans for a fourth compulsory subject, population education — and the CBC is currently working on the pilot stage.

We were welcomed by Mr Bal, a member of the Tianjin workers' organization, and director of the cultural palace. In the 1950s, immediately after the revolution he worked in a machinery factory and was elected in the 1960s by his fellow workers to a cadre position. During the cultural revolution he went back to the factory floor but has been reinstated since.

Every member of the cadre must have an education up to college level. If the managers or party secretary have not reached a college standard then they are given paid educational leave to study — as was Mr Bal. There is the opportunity to study for the exams at the three educational levels: middle school, high school and college.



Chinese workers relax on their day off.



A crowd gathers as one of the group starts to sketch.

The first lesson of the Workers Educational Association study tour of contemporary China came on the journey. It was to watch the hilarity of our fellow Chinese travellers at the slapstick of the in-flight film *Supergirl*.

The second was the appreciation of just how far western-style materialism has seeped into the veins of Chinese communism. When the plane stopped to refuel, there was a stampede to buy Japanese made consumer durables — cameras, cigarette lighters and portable tape recorders — among the Chinese, most of whom were returning students.

There were 28 of us on the study tour, only the second of its kind to China, which had been organized by Mr Harold Goodwin, a tutor organizer in the south-eastern district of the WEA who has made such tours something of a personal specialty.

Some of the group like Gill Aldridge, a WEA secretary from Nottingham, had been on a similar educational visit to Russia and had become converted to the WEA study tour as a way of holidaying.

Others like Eric Dunham and Mary Holborow had not been before but were no strangers to educational trips. They had just returned from a tour of four of Italy's volcanoes (including a night's camping on the slopes of Stromboli) with their WEA geology class from Lincoln.

Ralph was already booked to give a series of talks on China and to ensure

More than just a sightseeing trip

Felicity Jones goes on a Workers Educational Association tour of China

was particularly interested in the evening at the ballet and talking with the orchestra. "I never would have thought you could get such variation from a five-note scale", she said.

Eric is a retired lecturer in agriculture and was looking forward to that part of the visit which would take them to a rural commune. There was the secretary from Sussex University's centre for continuing education whose sister had come from New Zealand to join the group to see the place where she had lived when her father was a teacher in an Anglo-Chinese college.

There was the retired peripatetic head from Yorkshire who was always to be seen with at least two cameras slung around his neck. Since he had retired he had made a name for himself within the WEA for the talks he gives about places and their local history.

Ralph was already booked to give a series of talks on China and to ensure

that he had a good selection of slides for his illustrated lectures he bought extra ones of the Forbidden City and the Temple of Heaven in Peking.

For some, the WEA's tour had been suggested by the specialist travel agency, Voyages Jules Verne, who had organized this and similar trips. A computer technician and engineer from Reading had not known what to expect, knowing nothing about the WEA before, and had been pleasantly surprised by the breadth of access which the study tour gave to modern China as opposed to its history and culture.

It is that unique educational contact which opens doors otherwise closed in a communist country which makes an adult education visit more than just another sightseeing tour.

There was the inevitable coach trip to the Great Wall which in a monsoon heathwate at the height of a crowded

tourist season felt more like the Long March.

And perhaps the tortuous descent into the clammy marble vaults of the Ming tombs could have been dispensed with. But the sightseeing was more than compensated for by a visit to a street committee and workers' homes in Tianjin, the third largest city and major port 137 kilometres to the south-east of Peking.

Destroyed and then rebuilt following an earthquake in 1976, the tenements in the centre of Tianjin are under the jurisdiction of one committee and house over 40,000 people. Premier Zhou Enlai, then a student started the clandestine Consciousness Society which arose out of the May 14 1919 movement which carried the seeds of the later revolution.

The families who entertained the WEA students lived in model workers' flats which had two bedrooms, a living room, kitchen and toilet to accommodate at least five adults.

The eldest son in one of the families had just finished his exams at Nankai University and was about to study as a United Nations interpreter at Peking. His father, a worker in the vehicle manufacturing industry was proud of this achievement in itself reflecting the shift back in favour of the intelligentsia after the cultural revolution.

With the differentials in pay now creeping back into Chinese society, a

skilled joiner earned 150 yuan a month (roughly equivalent to £40) which was double the national average but his living conditions are best described as basic. They included a small stone sink in the kitchen, calor gas and coal stoves and bare concrete floors.

A small knitwear factory had been set up by the street committee under a collective industry scheme whereby the factory was responsible for its own profit and losses while making use of the labour of unemployed, disabled and women workers.

Another morning, another day in the tight schedule. The Tianjin Women's Federation, an arm of local government, explained the one child, one family policy. Since the policy was introduced the city's birth rate has been more than halved.

There are signs that the policy is being relaxed in the countryside and in certain categories such as where a female child is born to a couple who live with the wife's family.

A divorced couple can have a second child and overseas Chinese returning can also conceive again. There is a tacit recognition that the policy is temporary and it has worked sufficiently for the government to give some leeway.

The meeting with the women's federation coincided with a report in the newspaper *China Daily* which said that the majority of the better educated in China are still men. The numbers of women taking up university places has increased by over 10 per cent since the revolution and 25 per cent of students are women.

Illiteracy, however, is still high and nearly 70 per cent of the illiterate or semi-illiterate are women and a third of them are in their 20s with the largest problem being among rural women. The women's committee acknowledges inequalities and are concerned at present with the higher unemployment amongst female graduates. It tries to fix quotas with industry for a certain percentage female intake.

Mr Robin Munro, a lecturer in Chinese at the Polytechnic of Central London who is finishing off a thesis on dissidents in China and acted as the tour guide, had studied and taught there for several years.

He was impressed by the degree of commercialization within the country. "But most western commentators do not realize that far from signifying a loosening of state control it is the result of a pact between the government and the Chinese people in which they agreed to leave politics to the party in return for an improved standard of living."

"The control by the state in China is even stronger than in Russia and dissidence has been effectively crushed through imprisonment. How long that pact can continue as state capitalism is anybody's guess. But the signs are already there that tensions are developing," he said.

There are still a few places left on the next WEA study tour to India this winter. Anyone who is interested should contact Mr Harold Goodwin, 27 Somerville Close, Faversham, Kent ME13 8HP.

Next week: Peter Mauger and Geoffrey Parkins on higher education in China.

Junior doctors buy their way in

from William Norris

WASHINGTON Residency positions in some American hospitals are now up for sale to foreign medical school graduates, willing and able to buy their way into the lucrative world of United States medicine. Other institutions, especially in Canada, are taking young foreign doctors who are prepared to work for nothing during their postgraduate training.

The situation has been brought about by a cutback in the number of residency positions available, and a reduction in funding. The number of openings still exceeds the output of the United States' 127 medical schools — 18,500 to 16,500 — but the statistics are distorted by the fact that there are heavy applications for the more popular specialties, such as orthopaedic surgery and obstetrics.

As yet the numbers involved are small, but they are enough to worry the American Medical Association which fears that in future hospital residents may be only for the rich. Advertisements have been appearing in the

classified section of the *New York Times*, offering a \$10,000 reward to anyone who can obtain a position for a psychiatrist or paediatric residency.

Dr Rod Rohrich, chairman of the AMA's resident physician section, who is a plastic surgeon at Massachusetts General Hospital, said last week: "Graduates of foreign medical schools are real desperate. You spend 10 years of your life training in a foreign country, learning a new language, and being treated poorly. You end up at 31 or 32 with a big debt. When it comes time for a residency, people will take what they can get."

The temptations for hospitals to accept money, or to get residents who will work for nothing, Dr Rohrich added, arose from recent federal government attempts to reduce federal support for medical education by one third because of a projected surplus of physicians.

In Ontario, 60 out of 2,000 residents are now working for free. The Canadian Association for Interns and Residents is worried that this will force

them to take second jobs to support themselves, and jeopardize their competency in the hospitals.

"We don't want people working for nothing," said Dr Derrick Smith, a leading member of the CAIR. "Quality is in question. The people who are independently wealthy should have to do the same things as those without money."

The United States has about 1,200 teaching hospitals. In 1984 there were 13,377 graduates of foreign medical schools in residency positions, although 7,314 of these were US citizens who had gone abroad for their initial training.

There may be fewer of these in future. The state of New York, in an effort to enforce higher standards, has now announced that it will not accept postgraduates from four medical schools in Mexico, Dominican Republic and Montserrat. Inspections had shown that the schools were not conforming to American standards. They had poor clinical facilities and were operated by entrepreneurs rather than university administrators.



Dead leader goes into publishing

Enver Hoxha, above, the Albanian leader who died in April, is rapidly acquiring a posthumous reputation as a scholar. A collection of his writings entitled *On Science*, was rushed out within a few weeks of his death.

Reviewing this work last week in Albania's only daily newspaper, *Zeri Popullit*, Professor Aleks Buda, president of the Albanian Academy of Sciences, spoke of Hoxha's "universality of interest" and his "orderly analyses and synthesis" as a feature of "the great thinkers of mankind".

According to Buda, Hoxha's exposition ranges from "major problems of national fundamental theoretical value" to "the creative spheres" of the sciences.

Most of the book is in fact devoted to the social sciences, in particular to the defence of Marxism-Leninism (considered to be a science) against the "scum prepared by the international bourgeoisie".

In spite of the claimed profundity of Hoxha's scientific thought, the editors apparently had some difficulty in finding sufficient material. Almost half of the material is previously unpublished, and it seems that the editors had to make use of odd jottings, notes and drafts. It seems that the editors had to make use of odd jottings, notes and drafts which Hoxha had himself abandoned or filed for further revision in order to pad out the work.

Polish censorship extended to history

Publishing history, even in a learned journal, can constitute a branch of political interest of the Polish state, according to censorship official Justyn Sobel. Interviewed last month in the Poznan newspaper, *Gazeta Pomorska*, Mr Sobel claimed that Polish academic journals are now censored only when matters of state security or Poland's defence capability are concerned. However, he added, certain

academic disciplines, including modern history, have become the subject of "politically oriented treatment". Current Polish censorship, though allow to appeal to the courts, is thus, obviously, impractical. In the case of ordinary journalism, in an interview, Mr Sobel mentioned one case last year of a historical article which went right up to the supreme court, before it was finally banned as detrimental to the interest of the state.

Private university vetoed

from Barbara von Ow

MUNICH The Bavarian government has imposed a final veto on plans to establish West Germany's third private university in Ingolstadt, 50 miles north of Munich. Prime minister Franz-Josef Strauss's cabinet unanimously endorsed Bavarian culture minister Hans Maier's verdict that the project for an International European University for medicine did not meet the strict requirements of the Bavarian university law.

The refusal was based on two objections. First the limited range of subjects meant that the university would only offer the preclinical part of medical studies. This would be incompatible with the Bavarian university law. Second, the financial framework presented by the "Society for Science and Education", which submitted the project in 1983, fell far short of the official requirements. Instead of the minimum guaranteed sum of DM30 million the society had only been able to offer DM7 million.

Caste protest dies down

from A. S. Abraham

BOMBAY After five months of violent and often bloody disruption, Gujarat state has seen the end of protest against reserved places for backward Caste (OBCs). A section of students that was opposed to the agreement signed by the local government and leaders of the protest has also announced its support.

The only remaining source of conflict is the system of accelerated promotions in government jobs but this is likely to be settled in the near future. As far as the students are concerned (the protests were spearheaded by student bodies) they have won this round. Under the agreement, the 10 to 28 per cent, which is what sparked the protest in March, has been cancelled until a national consensus on OBC reservations in general is reached.

The protesters have also got the government to agree to take a fresh look at the present 10 per cent OBC reservations which were granted in 1978 and which will run out in 1988. One of the demands that had been raised was that, when the Gujarat government increased reservations on overnight to 28 per cent, it justified its commission had recommended such a proposed applying economic as well as caste criteria.

The Gujarat government has also agreed to increase the number of places available in medical and engineering facilities in them or by expanding, so that the competitive pressure for admission is not as great as now.

In September The Times Higher Education Supplement

published a 4-page analysis of the joint statement from the University Grants Committee and the National Advisory Body regarding the basis for considering the present and future role of higher education in our society.

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مكتبة في الأصل

The phoney war

Politicians and academics have been tilting at degree mills for at least 50 years. Successive governments have been pressed to legislate to end the black street trade in phoney qualifications, yet each time they have shelved the issue. As a result self-styled academics and their bogus, or substandard, institutions have been allowed to prosper unchecked. Many sham academies thrive at the expense of overseas students who place their trust in the reputation of British higher education.

The current call for legislation revives a debate which was raging in Westminster in the 1970s. The unique feature of this campaign is that one of its three spokesmen is an inspector with the Fraud Squad, who has been prompted to take part because he finds there is no adequate provision under existing laws to stop the traffic in bogus degrees. As a result many investigations have had to be dropped.

When Thomas Cox - then Labour MP for Wandsworth central - raised the issue in the House of Commons 12 years ago, he said legislation was "long overdue". He drew attention to the fact that as long ago as 1963, the Robbins report on higher education had called for such legislation. The report had warned that bogus degrees, through ignorance, proved attractive to people abroad, and have caused embarrassment to those concerned with the reputation of British education.

Cox suggested that anyone who tried to sell degrees in this country but had not been registered with the DES should be fined £500 for a first offence, and thereafter £1,000.

Just a year before Cox's campaign, Joan Lester, then Labour MP for Eton

and Slough, called for the Government to carry out an investigation into the activities of degree merchants in Britain, and for sanctions to be taken against them.

The reply she received in the Commons from Norman St John-Stevens, at that time under-secretary of state for education, was: "The problem of spurious qualifications is rather like dealing with a many-headed hydra. As soon as one head is cut off another appears." He was referring to the fact that one person may run a number of institutions, and can regularly close one and open another, merely changing the name.

Mr St John-Stevens also said: "I'm afraid, however, that people are credible and gullible. This is one of the results of original sin, and I do not think one can do much about it at law." He asserted that provisions in the Theft Act, making it an offence to obtain a pecuniary advantage by deception, could be brought to bear against degree mill operators. But in practice, according to Fraud Squad officers, it is almost impossible to apply those provisions in such cases.

Mrs Thatcher was then education secretary. Her response to the call for legislation was: "There would be difficulties over legislation but I am considering whether there are alternative means of protection against such activities."

Successive governments have always claimed there are "difficulties" about introducing legislation. These centre on their reluctance to introduce sanctions which it would cost time and money to police.

Mr David Stanford, an assistant secretary at the DES, with a special responsibility for monitoring academic fraud, echoed the Government's tradi-

tional stand when he said in response to the current campaign: "We would like to introduce legislation which would be effective without involving us in a huge monitoring exercise."

Sir William van Straubenzee, chairman of the Commons Select Committee on Education Science and the Arts told *The Times*: "The problem isn't whether you could possibly legislate - the problem is one of enforcement." He believes that independent higher education establishments should be "self-regulatory", rather than "policed by an additional core of civil servants". He would like to see a body, such as the newly set up British Council for the Accreditation of Further and Higher Education, take responsibility for enabling students to distinguish between the authentic and the sham.

Currently the campaigners against pseudo-academic institutions and degree mills are split into two camps. There are those - including Reg Prentice, former education secretary and Conservative MP for Daventry; Lyndon Jones, principal of South West London College and chairman of the Association of Business Executives; and Inspector Bob Moffat of the Fraud Squad - who want the black market trade outlawed.

Then there are those - including the British Council, and Sir William - who believe that it is more important to improve the system whereby higher education establishments are accredited. They argue that if the new British Accreditation Council is able, within the next two years, to produce a definitive list of institutions which it deems reputable and of a high standard, then those which are not on it will automatically be suspect.

Theresa Harvey, director of the British Council's central information service, said that up till now there has been no objective standard by which to judge independent colleges and she has difficulty helping staff in overseas offices to know what advice to give to prospective students. She said: "I don't see the need for legislation if the accreditation system works."

"If the system does work it will enable colleges to go through a procedure which will enable everyone to know whether a college is up to standard or not. In the first two years there would have to be some flexibility, because some reputable colleges would not yet have gone through the process. But after two years we would expect them all to have gone through it."

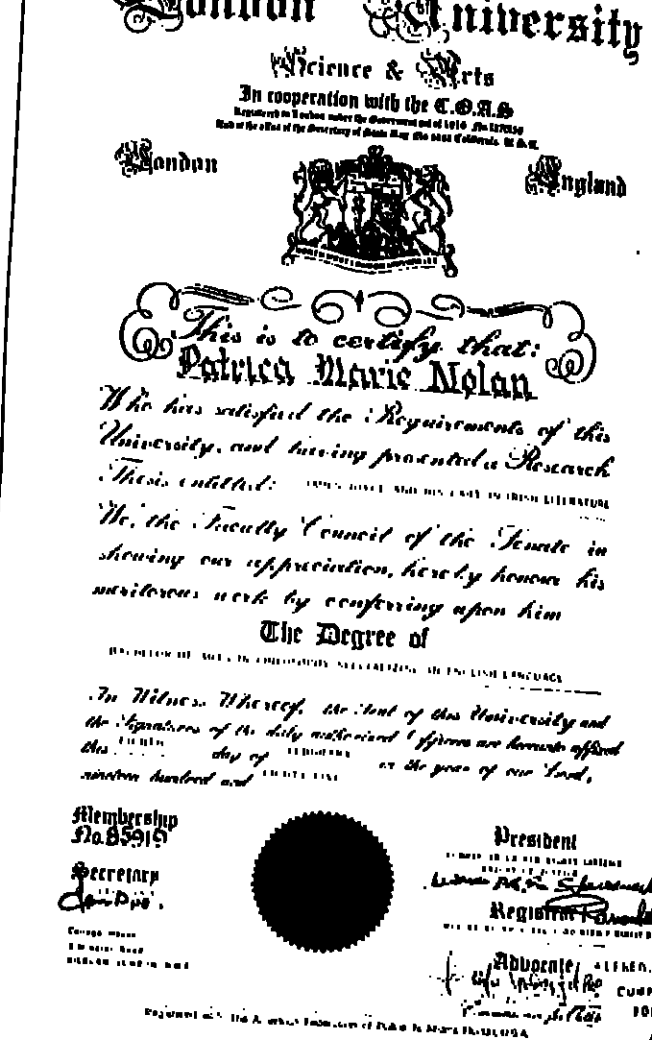
She said this would help the British Council to answer inquiries from abroad. Currently, if they are asked to comment on the standing of a place which they think is dubious, they have to say: "We have no knowledge of this college." In future, she says: "We will be able to say this place is not accredited, and people can form their own judgements." She added that some overseas students are "astute enough to ask about a place before enrolling. But obviously we have had cases where people have gone through the whole thing and ended up with a certificate which won't be useful. By then it's too late."

At least 500 worried inquiries or complaints get back to Ms Harvey's office each year. She fears that this may be just the tip of the iceberg, and that large numbers of foreign students, mostly from the Far East and West Africa, are being counted by academic hoaxers in this country.

Students in developing countries are the prime target of academic confidence tricksters. Some of them are duped by places which offer unrecognised qualifications in return for little or no work. Others attend institutions which are way below the normal standards of British higher education, but do actually offer a semblance of education.

Many dubious institutions model themselves on reputable colleges and universities, and use the same names and realising. Some of them invent names which are so derivative of well-known universities and colleges as to be confused with them. For example, the "University" which was bought our BA degree, calls itself North West London University, which is deliberately reminiscent of London University.

One unrecognized institution which has caused problems for 15 years, is



This is the impressive-looking parchment degree certificate bought "off the peg" from the North West London University for £150. The pseudo-academic institution usually sells any of its range of degrees for £300, but agreed to supply a bachelor of arts half price to *The Times* reporters posing as prospective students. Dr Sydney Lawrence, president of the university, made the "discount" announcing proudly: "I like to help people". He claimed the "degree" would be met by the institution's charitable funds.

Dr Lawrence boasts that North West London University - alias the College of Applied Science, London - is associated with London University. This he "London University" writ large, and "North West" almost obscured. This country which chose names misleadingly similar to those of bona fide universities and colleges, and thereby feed off their reputation.

Dr Lawrence - known variously as Commander Dr Sir Sydney Lawrence, the Duke of Neullay, Minister of Justice, and Grand Master - said we could buy a set of papers which were "ready to go out" to another student. He provided one certificate in perfect calligraphy with the assumed name we had provided. He backdated the certificate to February, spelt "February" on one. He also made a typing error on the certificate of completion, so that it read "Bachelor of Arts in Philosophy".

The university prospectus, loose-leaf and on poor quality paper, is riddled with spelling mistakes and chaotic grammar. For example, it reads: "Unfortunately we do not run any correspondence courses as we are under the impression that this type of work could be copied from any book and sent in the student's own work, and which can be very misleading."

The prospectus concludes: "Confidence can play a great part in your life, and this confidence must be projected to the person to whom you wish to walk in your door. If they see your credentials on the wall which will show them that you are a person of intelligence and integrity..."

The walls of Dr Lawrence's office - a front room in a suburban house in Kilburn, North London - are decked with framed certificates in several different languages. Asked about the worth of the qualifications he deals in, he claims that they are a passport into employment, and promises to vouch for his "graduates" if he is contacted by a prospective employer.

Sussex College of Technology, Sussex University has been "plagued" with inquiries relating to this college, and keeps a file on it two and a half inches thick. Employers regularly contact or not the college to establish whether or not the college is connected with it. Recently someone checking received a call from someone claiming an applicant's claim that he had obtained a qualification from Sussex College of Technology in the late 1950s, and that institution had since turned into Sussex University. The university obviously denied this.

A spokesman for the university said: "We have been plagued. We get calls regularly from employers wanting to validate qualifications. We inform the person concerned that we definitely didn't give the degree and refer them to the DES. Obviously this is particularly for Sussex. At a time of the reputation of British education any necessary person may not necessarily know the difference between Sussex University, which is a renowned university, and Sussex Col-

lege of Technology, which is not recognized." He explained the current spate towards the issue within academia: "The current climate, academics are more worried about replies to the UGC, the implications of Jarratt, or whether or not they'll have a job in three years. This other problem is nuisance value."

One reason why bogus universities can trade with impunity, is because there is no legal definition of a university, nor of a degree. Awarding degrees is the prerogative of the Crown. Universities are granted the franchise to bestow degrees by Royal Charter or Act of Parliament. The Archbishop of Canterbury also has the right to confer degrees.

But nothing acts as a stumbling block to the salesmen. Take the North West London University's use of the signature of Lord Bishop Ramsay. This is clearly intended to be confused with the former Archbishop of Canterbury and thereby suggest the institution carries enormous prestige and power.

The report in question, by Charles Silcock and David Williams from the chartered accountants Deloitte, Haskins and Sells, has not exactly caused a storm of gossip and disquiet. It reveals no spectacular cases of malpractice or even inefficiency. But it does state, in simple terms, what people have known for some time - that the way universities gather and present financial information varies so much that a uniform view of the entire scene, and comparisons between them, are almost impossible to achieve.

The report echoes the findings of a University Grants Committee inquiry carried out in 1981 by Professor David Flint, of Glasgow University, which considered that one of the biggest problems universities have in reporting their results is that

the objectives of, and the users of, their accounts. At present, universities have few legal requirements with regard to accountability. They are all required to provide the UGC with detailed information of income and expenditure - but the figures produced are virtually meaningless because of the distortions caused by reserve accounting (tying down sums for unspecified purposes into reserves) and the arbitrary exclusion of certain activities.

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Methods of art present a similar problem, and

Life in the super-fast lane

"Tell me the position of every particle in the universe and I can predict the course of all future events." When the great mathematician Laplace made his declaration 200 years ago, he was merely affirming a principle. Today, he would be applying for time on a supercomputer.

Not that any machine yet in sight could tackle the whole Laplacean project. But a few hours in a computer capable of 100 million operations a second does a lot of arithmetic. And designs now coming to market will offer 10 or 100 times as much power as this.

British science policy-makers want researchers here to have access to such machines, and the committee they asked to work out how has just told them it will cost £60 million over the next five years. The group, chaired by Professor John Forty of Warwick University, found strong demand for this kind of number-crunching from many disciplines. Their recommendations now rest with the Advisory Board for the Research Councils, the Computer Board for Universities and Research Councils and the University Grants Committee, who have to see if they have the cash.

It is a field where Britain was once world leader, with the Ferranti Atlas machine built in the mid-1960s. Since then, the small market for supercomputers - simply, the fastest machines available - has been dominated by the Americans. The small specialist mainframes of Cyber have vied for ascendancy, with Cray usually ahead. Both now face competition from Japan.

The most common machine, which sets the 100 million operations a second standard, is the Cray-1 and its derivatives. Machines like this are found in weapons laboratories in the United States and Britain, weather forecasting bureaux, the British Government communications headquarters at Cheltenham, and a few oil companies. Academic users in Britain can bid for time on a Cray at the University of London Computer Centre, which used to live at the Science and Engineering Research Council's Daresbury laboratory, or a Cyber machine of similar power in Manchester.

But these machines are being superseded rapidly. The next Cray model, the X-MP, is 10 times as fast. And there are already plans for designs 10 times faster still, from Cray and others. These would be 10,000 times as fast as

the old Atlas, at not much greater cost. Professor Forty's report shows other countries are moving to make the next generation machines available to more users. The most ambitious initiative is in the United States, where the National Science Foundation is putting \$200 million into four national supercomputer research centres in universities, with similar sums expected from local finance.

The NSF programme is the product of a growth in enthusiasm for the potential of super-fast calculation in scientific fields like quantum physics. They were helped by the stimulus of Japanese competition, by increased industrial use of such machines for jobs like aeroplanes design and modelling oil reservoirs, and by the award of a Nobel prize in physics to Kenneth Wilson of Cornell University for work in quantum field theory using supercomputers.

In Britain, the Forty committee sent questionnaires to interested scientists, and reported them desperately keen to have better access, and to faster machines. A lengthy appendix gives a good survey of the scientific uses of supercomputing in the 1980s. In some applications, researchers want to know detailed properties of systems whose basic laws are understood fairly well, but which are too complicated to calculate on low-power machines. For example, the equations governing the energy levels of electrons in an atom are known, but the solutions become highly complex for large molecules, alloys, and thin-layer materials. The same applies to analysing collisions between complex particles in nuclear physics and to studies of galaxy formation in astronomy.

Protein crystallography is another field which has always stretched the limits of available computing power. The X-ray diffraction patterns from a protein crystal get more complex as the size of the molecule grows, and biologists are now trying to solve three-dimensional structures of proteins with 6,000 or more atoms.

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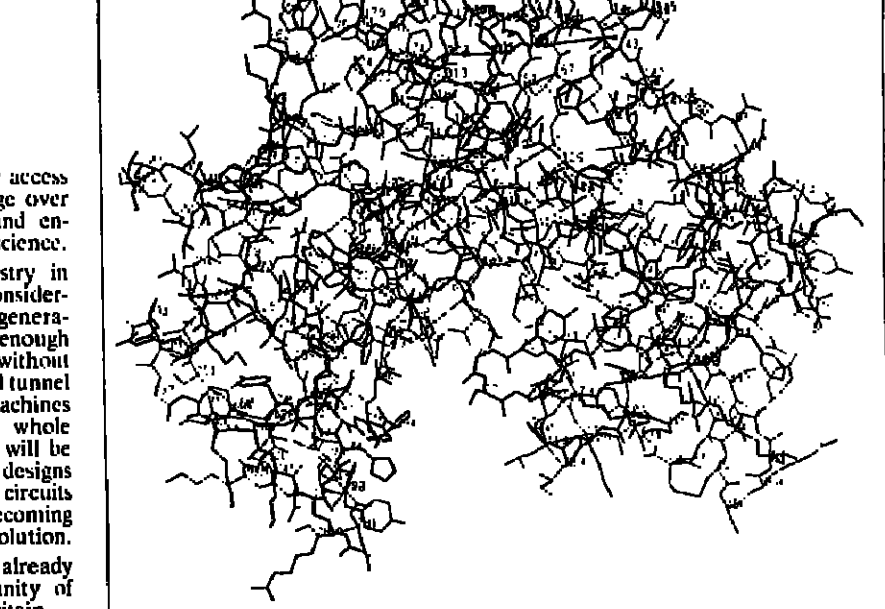
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This computer drawing of a protein molecule - of a cheese-making enzyme - was made by researchers at Birkbeck College using the University of London Computer Centre's Cray 1 computer. Analysis of X-ray data from still larger proteins will need the next generation of supercomputers.

lem up to the ABRC and the Computer Board for Universities and Research Council.

Even at this level, the money will still be tight. The computer board, which is responsible for national computing policy in universities, has less than £20 million a year for capital investments across the board. Most of this is accounted for by a permanent programme of replacements of local mainframe computers on campus and at the regional or national centres in Bath, Edinburgh, London and Manchester.

The ABRC plans to consider how to make room for future capital investments later this year. It is beginning to free some money by withholding a small percentage of the science budget in forward plans to create a "flexibility fund", but this is still quite modest. The two may look to the UGC for help in raising the implied £12 million-a-year investment, but there is unlikely to be any new money on offer for any of the potential spenders.

The report also suggests creation of a new Advanced Research Computing Advisory Body, with a full-time director. This group would advise the three

bodies which commissioned the report on future policy in this field, although its remit would overlap considerably with the existing role of the computer board.

The new body's most important role would be co-ordinating use of the new facilities, and making sure allocation of time on the new machines follows procedures which satisfy contending users. Some former research council-backed users of the Cray now in London complain about the way time on the machine is divided up. But these problems are probably due more to the increasing popularity of supercomputers than to the administration of the ones we have. The complaints heard today will grow fiercer unless the money is found to act on at least some of the Forty committee's proposals.

Future Facilities for Advanced Research Computing. The report of a joint working party of the ABRC, Computer Board for Universities and Research Councils and UGC. Available from the Science and Engineering Research Council, Polaris House, North Star Avenue, Swindon.

Peter Aspden on the increasing attention universities have to devote to accountancy

The balancing act

In ordinary times, a report on accountancy techniques employed by universities would scarcely raise a common room whisper; but in the present period of unparalleled pressure, such an examination has assumed a far greater significance.

University finance has always remained a slightly detached, even mysterious, subject, largely unquestioned and quite unlike the processes of any other institution. Auditors have annually ensured that no criminal or gross negligence has taken place, but book-keeping has traditionally been performed and assessed in a relaxed atmosphere. In today's fiercer climate, however, accounting methods, balance sheets and profit and loss figures have become vital ingredients and indicators of the day-to-day running of any university.

Meticulous book-keeping and efficient planning have now taken on a dual significance; first, it is the only way to cope with the considerable financial cuts which have been hitting universities in the last five years (and the scale of which would have crippled many businesses); and second, it has become a means of proving that your own institution is well-organized and can take swift and decisive measures - a gold star in the post-Jarratt register of well-run centres of excellence.

The report in question, by Charles Silcock and David Williams from the chartered accountants Deloitte, Haskins and Sells, has not exactly caused a storm of gossip and disquiet. It reveals no spectacular cases of malpractice or even inefficiency. But it does state, in simple terms, what people have known for some time - that the way universities gather and present financial information varies so much that a uniform view of the entire scene, and comparisons between them, are almost impossible to achieve.

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show that this is not just an esoteric accountants' game. How credible would a university be if it pleaded poverty, massive deficits and so on, if its corridors happened to be lined with paintings worth thousands of pounds? Would they be saleable? Would it be publicly acceptable to sell them? Are they an integral part of the educational atmosphere, without which the university would lose its reason for existence?

Precisely because of the financial pressures of recent years, universities have been consulting with increasing frequency their auditors and, in some cases, management consultants. But their advice for, say, coping with a loss-making year illustrates the unique problems faced by universities. Among the possible solutions for an ordinary business would be:

- borrow money - virtually impossible for a university which faced an uncertain future, with no prospect of level, let alone increased, funding;
- close departments and shed staff - 1981 was the departure of much of universities' older staff, shutting off the option of early retirements, and tenure prevents more drastic measures;
- wage restraint - claims are negotiated nationally.

The obvious route left open is that magic word "rationalization" - and it is here that the need for tight planning, improved organization and increased efficiency becomes apparent.

But to what extent universities can actually save money by tightening up their administration is open to question. Certainly, the Jarratt committee was noticeably reluctant to quantify the benefits of following its advice, and the six individual case studies also found no dramatic room for improvement.

This summer's research selectivity exercise for universities is primarily aimed at directing scant resources to high-quality research; but,

by demanding detailed responses from universities on their future plans, it has had the side-effect - in theory - of making them far more aware of the need to establish priorities, much more conscious of forming strategy plans. This will have undoubtedly financial ramifications. But as Jarratt recognized, the two desirable ends - greater efficiency and better quality academic work - are separate and distinct, although they can clearly influence each other.

Both Silcock and Williams are convinced that the successful university to emerge from today's cost-cutting climate will be the one that reforms, streamlines and rationalizes its administrative structure at departmental level. Neither feels there is enough slack in the centralized planning level to make many more improvements, although some degree of standardization would help.

All of which leaves the UGC in the most difficult position of all. It has to make crucial decisions on the future of universities, faculties, departments and ultimately jobs - but what kind of information is it receiving to help it make those decisions? Meaningless and non-comparable accounts, which say nothing about a university's real financial state, and detailed statements of research plans, which say much about the efficiency of an institution's committee structure but little about academic quality. It is no wonder that the universities are throwing up their hands in horror, especially given the widespread doubts as to the UGC members' abilities and qualifications to make such judgements.

In the mean time, the forthcoming academic year will be full of plans from individual universities that are already using words like crisis, trauma and bankruptcy as common currency. They will give detailed figures spelling out spectacular losses and the need for shedding jobs; yet some of them give the impression, to quote an Association of University Teachers officer, of planning everything on the back of an envelope. Troubled times, indeed, lie ahead.

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كتاب من الأصل

Pauline Stafford

Double standards on the road to sanctity

Probably only dedicated Vatican watchers will have noted the recent decision of a Vatican tribunal to proceed with the beatification of the original Don Juan. At least Don Miguel Manana Vincentelo de Luca y Colona has long been seen as the original. In fact the story of the promiscuous Don was already current when that gentleman was only three years old - a precocious child perhaps but there are limits even for infant prodigies. Once Don Miguel had achieved adolescence however he set about proving himself in such a way as to merit the subsequent identification and the Vatican is in no doubt about his mispent youth of wanton debauchery. It is not, of course, his youthful excesses but his later conversion which are deemed to merit sanctity. Don Miguel repented, married and finally became a baronet Carmelite. It is in the customary guise of the repentant sinner that he is now to be moved towards the company of saints.

If the profligacy of his youth is too common to assure him sole claim to the title of Don Juan, his repentance is also a well trod route to sanctity. Thomas Becket, Francis of Assisi, Augustine - saints show such boring predictability in their life choices that the truth of individual cases is often suspect. Some certainly had the pattern forced upon them by the enthusiastic propagators of their cults; authors of saints' lives felt this was how a saint should behave. Augustine left us his own autobiography, his *Confessions*, in which he tells progress from minor peccadilloes like stealing pears or loving to win at games to his abandonment to a life of pleasure in the fleshpots of Carthage. As a genre *Confessions* are as suspect as saints' lives. Who is more trustworthy than when surveying past life, regretting a mispent youth, boasting of earlier excess, rewriting experience from the perspective of middle age.

Some sort of middle crisis from which the activity of youth becomes an object of nostalgia, regret or mythologizing is a common enough phenomenon to account for the regularity of such patterns in personal reminiscence. These patterns, however heightened or distorted, arguably represent the transition from youth to maturity. They carry conviction to readers and to the authors of personal reflections because they correspond, in however idealized a form, with their own experiences, just as they serve to shape the memory of those experiences. The emphasis in the Christian tradition on conversion and the particular abhorrence of sexual sins has provided a finely detailed vessel.

If Don Miguel's pattern is a Christian one in its precise shape, a human one in its general significance, it is in other respects a masculine one. The sensualist turned ascetic is a theme found regularly in the lives of male saints. There are few Magdalenes to match the Augustines, and those few often prostitute virtue (as the Magdalene herself is presented, on the most slender of evidence). Unlike their more numerous male counterparts they do not represent an idealized model with which women could, or were expected to identify. Female saints are fewer in number anyway, but

those who have achieved that dignity have most often done so along the route of consecrated virginity, passing from family to convent as models of preserved purity and not of reformed life. Even the servant saints of the later middle ages, who appealed to a group of women normally presented as immoral, are shown resisting the advances of master or son-of-the-household, maintaining virginity rather than indulging a life of excess to be later repented. More rarely, widows, faithful wives, even the dangerous female mystics swell the ranks of female sanctity, though the latter especially have often been hotly disputed or tarred with imputations of heresy.

Patterns of sanctity change endlessly. Like patterns of heroism to which they are so obviously allied they exist in a close relationship to contemporary society. Like heroism they are rarely simple expressions of popular feeling or unmanipulated by intellectual or other elites. To generalize about them would be a risky business and I make no pretence to providing such a framework. But this common distinction between male and female saints, which the Vatican is here reiterating in its extent to which Christianity has reinforced the ideal picture of woman as virgin and mother. It also chimes with a female life pattern which at certain social levels (and these most likely to produce saints and their lives), took that of husband and emphasis on the virginity of brides as a guarantee of the blood-line of her husband's family. By contrast the male cycle of mispent youth and subsequent repentance reveals the opportunities for unfettered

action open to young men, usually at women's expense. It betrays a constant double standard in the expectations of behaviour in the sexes and a maleficent view of women who are simplified into virgin brides or temptresses. The pattern is advocated and enforced in most male culture. Lord Mountbatten, alleged to have advised the Prince of Wales to sow as many wild oats in his youth as possible, since his subsequent situation would now be prepared to state the case so baldly, but the assumptions still exist and are powerful even in the criticism of the transgression. They are a factor in the transgression of female youth and in the creation of circumscribed pictures of female sanctity.

It must certainly remain a moot point whether such pictures distort the reality of women's existence in the past; whether a different lifestyle for women was desirable in such societies; whether its possibility was excluded by patriarchal patterns of power. What is clear is that these two patterns of heroic sanctity reflect a society and system of values inhibiting to women and as such are subject to much current reappraisal.

In proceeding with the beatification of Don Juan the Vatican is choosing a route which is an example of classically appropriate in the face of modern permissiveness. But I suspect that the proposal is insensitive if not repellent. In its stress on personal male conversion it shows a total failure to consider the victims of such repentant sinners. And it perpetuates the acceptance of double standards and limited female roles enshrined in the life of this male archetype.

The problems facing biomedical research today are numerous and varied and are likely to be solved only by a radical reshaping of the whole system. Many of the reasons proposed to explain the dire straits in which it is claimed that biomedical research can now be found are, if not false, then certainly oversimplified and the unfavourable comparisons made with the United States show a naivety that borders on ignorance.

The most often quoted cause for these problems is, of course, an acute shortage of funds. The case for such a shortage is far from convincing. What there is, however, is a gross misuse of available funds with far too much money being used to fund "overhead" - both at the central level and at the local level.

Overheads at 60 per cent of total direct costs are not unusual. Such sums cannot be justified. Total overheads (central and local) should be reduced immediately by at least half and eventually be "capped" at no more than 5 per cent of the direct costs of the grant or of the funding agency's budget.

The totally artificial distinction of the "public" and "private" sector (surely a distinction second only in fallaciousness to that used to designate research as either "pure" or "applied"), particularly in higher education, is another example of unnecessary duplication. There needs to be just one higher education/research system with one goal; excellence in teaching supported by excellence in research.

The so-called peer review process (which often consists of too many chiefs and not enough Indians) needs a major overhaul. First, peer review teams need to be biased towards the younger Indians active in the laboratories today. It is the problems of today which need to be solved with the technology of today or even tomorrow and not necessarily those with which the chiefs have already struggled using earlier technologies.

The anonymity of the review process should also be changed as a matter of priority. If a reviewer is not prepared to publicly defend his comments then his reviews are likely to be of very limited value. This would create constructive reviews, greater encouragement for the younger scientists, and, ultimately, better directed research.

Most of us who have done any science editing are aware that reviews from the "big name" people, if they do manage to find the time to complete the review themselves, are available only after an inordinate period of time, are forthcoming only on condition that one or two types of equally unhelpful comments, either "This is terrible" or "What a wonderful piece of work which confirms and yet extends what my group did *n* years ago". Perhaps the concept of review by peers (with its connotation of review by superiors) should be replaced by that of review by real equals or even by relative newcomers.

Of ideas has also been suggested as a problem with biomedical research. Since there are now all these *alpha* quality applications that cannot be funded we need to assume that there is now no acute shortage of ideas. The trouble is that many of these applications are graded by the people who should be doing the reviewing in the first place. Inappropriate reviews by inappropriate people lead to inappropriate judgements which, in turn, lead to inappropriate work administration. Why is a successful scientific or medical career so often "rewarded" by an administrative post?

The fact has been bemoaned that the Medical Research Council can now fund only just over half of new project grant applications, that priority scores for funding are now in the 6 to 7 range, and that some grants (the implication is of a minority of the total submitted) are "approved but not funded".

In the United States, at least some of the institutes within the National Institutes of Health can fund less than one score have to be the equivalent of means that a poor review by only one member of the committee will result in a completely unsuccessful application to be used for as many as two in three requested budgets (particularly for equipment and travel) becoming almost the norm, and programme grants a real rarity.



Too many chiefs, not enough Indians

Christopher Dunn argues for a radical review of biomedical research

It is hard to accept that all these "approved but not funded" applications necessarily represent a surfeit of ideas. Cynically one might wonder about the political expediency of a grant-funding agency having all these *alpha*-category grants which it cannot fund. More realistically, we are still searching for new and important concepts to long-term problems.

The issue of tenure is one which has to be resolved as a matter of priority. University faculty require tenure but they require it at the time they are showing most promise and not after an almost year-to-year basis. How does one encourage the younger scientist to better positions, competing unfairly, if only because of their reputations for upward mobility of a promising scientist whose very future, in fact, often resides with the tenured professor.

Apart from a clear career structure for "scientists" (just "scientists" - not and "clinical faculty" on the one hand and the need for promising candidates (judged by the newly established "Equity Review" procedures, and to be granted tenure within five years of completing studies for their doctorate.

This tenure, with all its classical implications, should be valid for 10 to 20 years, then renewable for five years thereafter depending on performance. In this way, the most productive years of a scientist's career could be nurtured and spent concentrating on science without the pressure of having to find time and effort to write grant applications often to fund their own positions. Tenure reward which first and not be the placidity and discourages the ambitious younger people.

There is also an element of the problems relating to biomedical research. We have talked ourselves down into a hole so often and for so long that now we believe (falsely) we are far worse off than many other countries and so well and truly buried to the extent that "escape" is becoming increasingly difficult. Such a conclusion is largely a figment of our imagination and is in stark contrast to the atmosphere encountered in the United States where the belief that anything is possible, however severe are their budget cuts.

To compound matters, when we have extolled the virtues of something

it has been done in a totally superficial way. From our ivory towers of science and medicine, from which we have been far too reluctant to descend to justify the expenditure of public money, the advantages of drugs and other agents have been listed almost *ad nauseum* but possible side effects are hidden away at the bottom of the package insert. New things represent a balance between an advantage (for example, longer life) and a disadvantage (perhaps environmental pollution). Yet it is only within the last few months or so have I heard scientists actually prepared to discuss, in open session, the concept of risk; benefit ratios applied to scientific and medical advances.

Through bad management and/or poor public relations the majority of the general public has the impression that anything it buys or is prescribed will be good for them, will cure just the complaint for which the drug is purchased, and will do it without any unwanted side effects. It is no wonder the general public gets so upset when some drugs turn out to be not as safe as they were led to believe - the public should never have been allowed the impression that drugs are totally safe in all circumstances in the first place.

It is justifiable that within the general public there exists a significant number of people who demonstrate a crisis of confidence in biomedical research, which borders on outright suspicion. Continuing, largely emotional, discussion of the antivivisection issue and, more recently, of test tube babies, paracetamol, the sterilization of food by irradiation, and the Silew nuclear power project are just some of today's manifestations of this distrust which, may perhaps, also explain the absence of a successful parliamentary lobby for the scientific community.

Poor management and poorer marketability contribute to the image of biomedical research in Britain. What we should do is to recruit a limited number of top quality, professionally trained managers to run biomedical research and to liaise between the scientists (working in the laboratories) and physicians (working in the clinics) to exploit the discoveries.

The problems will not be solved by taking in more "Straight A" medical students but by "pure" scientists perhaps from areas not conventionally considered to be related to medical research.

The author works in the field of aerospace haematology and has recently held an appointment at the Lyndon B. Johnson Space Centre, Houston, Texas.

Darwin and divinity

Freud once argued that what he termed the "universal narcissism of men, their self-love" had suffered "three severe blows from the researches of science". These blows had been delivered by Copernicus, who had revealed that the earth is not the centre of the universe; by Darwin, who had shown that "man is not a being different from animals or superior to them"; and, predictably, by Freud himself, who had demonstrated that "the ego is not master in its own house".

Ever since the Enlightenment, this idea of science as the dispeller of the comfortable illusions of religion has been commonplace in our culture; and ever since 1859, the Darwinian Revolution has been cited as a most striking case in point. The argument goes something like this: Darwin lived in an age when science was all but stifled by religion. Having struggled heroically to free himself from the dogma of creation, he presented a theory of evolution by natural selection in the teeth of fierce clerical opposition. In the end, truth triumphed; and with the notable exception of most so-called fundamentalists, the representatives of religion conducted a more or less orderly retreat on the question of origins. Once again, myth had given way to science.

This familiar portrait of the "Darwinian Revolution" is itself a myth. As with most myths, it represents a creative distortion of history in the service of particular social interests. In this case, the interests involved are those of religious and scientific fundamentalism, both of which are committed to the idea of inevitable conflict between religion and science. But in reality the relationship between Darwinism and divinity is a good deal more complex than either group of fundamentalists would have us believe.

As long ago as 1951, the historian of science C. C. Gillispie wrote that, in the decades prior to the publication of the *Origin of Species*, "the difficulty as reflected in scientific literature appears to be one of religion... In following four centuries of religious science, rather than of divine revelation, the 19th century, natural history was part of a larger inquiry into the inter-relationships between God, nature, human nature and society.

Natural theology - the study of the existence and attributes of God as manifested in the works of nature - had been central to the work of English naturalists since the 17th century; and around 1800 it was powerfully reaffirmed in the writings of two Anglican clergymen, Thomas Malthus and William Paley. According to Malthus, nature and human nature were governed by providential laws which set limits to what might be achieved by social engineering at the same time that they rewarded Christian virtue with worldly success; while according to Paley, nature and human nature were a collection of happy contrivances demonstrating the wisdom, justice and benevolence of the Creator to his fortunate people.

Malthus and Paley set the terms of inquiry for English natural history over the next 50 years. Of course, there were many different interpretations on offer during this period. For example, while some naturalists followed the Malthusian line of seeing the handiwork of God in the laws of nature, others took up Paley's preoccupation with the designfulness of individual creatures. But either way, far from stifling scientific inquiry such ideas served to elevate it to the status of a religious duty.

Perhaps the most striking characteristic of natural theology was its ability to integrate knowledge and values within a coherent framework. By way of illustration, consider the extraordinary performance of the Reverend Adam Sedgwick on Tynemouth beach during the annual summer meeting of the British Association in 1838. On Friday afternoon of the meeting, Cambridge University's Woodwardian professor of geology led an excursion to the mouth of the river Tyne. According to Sir John Herschel, Sedgwick "stood upon the point of a rock a little raised" in order to address "some 3,000 or 4,000 colliers and rabble

John Durant looks at the Darwinian Revolution and asks whether the so-called victory of truth over illusion may not be more complex

(mixed with a sprinkling of their employers)". Thus placed, he led his audience "from the scene around them to the wonders of the coal-country below them, thence to the economy of a coal-field, then to their relations to the coal-owners and capitalists, then to the great principles of morality and happiness, and last to their relation to God, and their own future prospects". Here indeed was a wellspring of the word of the name.

The point of this apparent digression is that Darwin's *Origin of Species* was the last great work of Victorian natural theology. At first sight, this may seem an absurd proposition; certainly, it needs to be qualified by acknowledging that it was also the greatest (if not actually the first) work of Victorian evolutionary naturalism. Nevertheless, it is important to recognize that Darwin was trained in the tradition of English natural theology, that the problems with which he dealt were those of English natural theology, and that the audience at which he aimed his work consisted largely of English (or at any rate English-speaking) natural theologians. Very briefly, both Darwin's life-long conviction that "the whole universe is full of adaptations" and his life-long confidence that these were to be understood as "direct consequences of still higher laws" followed from a Paleyan view of the world coupled with the belief that, as the Cambridge polymath, William Whewell had put it in 1834, "with regard to the material world... we can perceive that events are brought about not by insulated interpositions of Divine power, exerted in each particular case, but by the establishment of general laws".

What makes this last quotation significant is that Darwin placed it in the frontispiece of the *Origin* alongside a famous passage by Francis Bacon on the "fourfold" of divine revelation. Together, these quotations gave notice that the *Origin* fell squarely within the conventions of natural theology; and Darwin further underlined this point in his final chapter, where he stated that "to my mind it accords better with what he knew of the laws impressed on

Production, extinction of the past and present

matter by the Creator, that the production and extinction of the past and present inhabitants of the world should have been due to secondary causes, like those determining the birth and death of the individual". The secondary causes that Darwin invoked are well-known; what is not well-known is that Darwin explicitly invited his readers to see these causes as the means chosen by the Creator to populate the earth.

There is room for debate about the motives that led Darwin to offer the *Origin* as a contribution to natural theology, but one whatever about the fact that this offer was very widely accepted in the late 19th century. Of course, there were those who found the *Origin*'s message unacceptable; and here religion was surely one (though by no means the only) factor at work. But from the outset, Darwin numbered among his supporters natural theologians who saw no religious objections to the idea of evolution by natural selection. To just one example, the Oxford Anglo-Catholic



Aubrey Moore welcomed the *Origin* as a vindication of the Christian doctrine of creation! Always unhappy with a theology that involved God's occasional intervention in (and thus his "ordinary absence" from) the universe, Moore supported a comprehensively naturalistic theory of origins as at once an account of the facts of nature and a revelation of the acts of God. Between religion and science thus conceived there was not how could there have been? - any conflict.

Moore was representative of those who both understood Darwinism pretty well and assimilated it pretty fully into a religious world-view. But for every one like him, there were several more who appear (at least in retrospect) to have read the *Origin* through rose-tinted spectacles. To these people, evolution meant, not the grinding and apparently directionless process of descent with modification, but rather the grand and directional process of ascent from lower and merely animate to higher and spiritual realms of existence. Thus, for example, in his Bampton Lectures at the University of Oxford in 1884, the Bishop of Exeter Frederick Temple assured his audience that the "doctrine of Evolution" meant a "perpetual progress" in which pain was gradually diminished and pleasure enhanced through "the survival of the fittest".

Temple's views were typical of a large body of liberal theological opinion that found in the "doctrine of Evolution" (note the capital letter) the basis for a new natural theology of providential progress. The most striking feature of this theology was that it owed far more to the ideas of the philosopher of evolution Herbert Spencer than it did to those of Darwin. For although in a very general sense Darwin shared the optimistic mid-Victorian view that humankind had progressed and would continue to progress from barbarity to civility, he was clear that the law of natural selection contained no cast-iron guarantees. But Spencer was convinced that material, organic, moral and social progress were "beneficent necessities"; and his grandiose generalizations proved enormously attractive as the basis in science for a generally complacent liberal theology of automatic and orderly improvement in the human condition.

It would be easy to dismiss such liberal natural theology as a crude distortion of science. But before doing so, let us reflect on the fact that for around half a century after the publication of the *Origin*, and in some cases long after that, Spencer's vision of nature and society was far more popular than Darwin's even among non-religious natural and social scientists. During this period the theory of natural selection was in general decline among biologists; and the contemporary movement of ideas usually referred to as "social Darwinism" might more accurately be described as "social Spencerism". Overwhelmingly in the late 19th century, the response of both naturalists and theologians to the so-called "Darwinian Revolution" was to incorporate the ideas of evolution and "survival of the fittest" (the phrase is Spencer's) into a variety of new myths, every bit as anthropocentric and teleological as the old, creationist ones had ever been.

Nor would it be wise for us to become too smug about the collapse of

Spencer's reputation and the revival of Darwin's in the early part of this century. Although Darwin's vision was essentially vindicated in the emergence of the "modern synthesis" of natural selection and Mendelian genetics in the 1920s and 1930s, attempts to extract from this synthesis some insight into the human condition continued for the most part in the same old mythic tradition. Nowhere was this more apparent than in the reception accorded to the work of the extraordinary French Jesuit and paleontologist Pierre Teilhard de Chardin (1881-1955). Briefly, Teilhard attempted the complete reworking of Christian theology in evolutionary terms: the birth of the cosmos; the pageant of evolution; the person and work of Christ; and the ultimate redemption of the humankind: all were treated as aspects of the evolutionary ascent of the cosmos towards the "Omega Point" of ultimate unity with God.

Teilhard's philosophy was, pretty heady stuff, and it met with predictably mixed reactions within the scientific community. But among those who welcomed it there were a number of prominent evolutionary biologists who

Basis for religion without revelation

were already engaged in the attempt to find within Darwinism the seeds of a new, secular and humanistic religion. Indeed, the English edition of Teilhard's best-known work, *The Phenomenon of Man*, appeared with a laudatory review by Julian Huxley; and a few years later the eminent evolutionary geneticist Theodosius Dobzhansky organized his own personal inquiry into *The Biology of Ultimate Concern* around what he termed "The Teilhardian Synthesis".

Where was the basis for an accord between the Jesuit Teilhard and the secular humanist Huxley? The answer is relatively straightforward. Ever since the 1920s, Huxley had been convinced that in the evolutionary process there lay the basis for a new, secular "religion without revelation". The axis of evolution, he argued, was also an axis of human values. In the global metaphysics of Teilhard, Huxley discovered that the evolutionary process could be mythologized in this fashion as well on the basis of Catholic theology as on that of secular humanism. In each case, all that was required was the steady conviction, beloved by liberals, that progress is the fundamental law of history.

Throughout this century, liberal theologians and liberal scientists have tended to converge upon a form of religious evolutionary humanism every bit as ambitious as the natural theology of Adam Sedgwick. And we are not done with it yet. For quite recently, this process of convergence has reached its apotheosis in the writings of some sociobiologists. In his major work *Sociobiology: The New Synthesis* (1975), Edward Wilson makes strong claims for the ability of evolutionary theory to account not only for human social behaviour but also for religious beliefs and practices. "It is a reasonable hypothesis," he writes, "that magic and fetishism constituted direct adaptations to the environment and preceded formal reli-

gion in social evolution". Indeed it is. But such hypothesizing creates a curious dilemma, since to explain religion in non-cognitive terms might be thought to undermine its cognitive credibility; and if this is so, then sociobiology may well threaten the very phenomenon whose biological utility it sets out to establish. Wilson himself is well aware of this problem, and in a more recent work he sets his account of the sociobiology of religion alongside an impassioned plea for the re-investment of "the mythopoetic requirements of the mind" in "the evolutionary epic... [which]... is probably the best myth we will ever have".

It might be supposed that all theologians would view with a certain amount of alarm this take-over bid for faith on behalf of religious evolutionary humanism. But this is not the case. Indeed, Wilson's analysis of religion is itself heavily indebted to the work of the American theologian Ralph Burhoe, who has for many years been developing what he terms a "scientific theology". Burhoe regards religion as the "missing link" between animal "selfishness" and human "altruism". For him, God-language is a pre-scientific representation of the fact of human dependence upon the cosmic order; and there is no difference between saying that we are utterly dependent upon the will of God, on the one hand, and saying that we are utterly dependent upon natural selection - "the ultimate and awful judge whose laws man must find and obey if he is to continue thus to flourish" - on the other. At this point, where the role of priest collapses into that of genetic counsellor, it is impossible to distinguish in any meaningful sense between Darwinism and divinity; for the one has been transformed into the other.

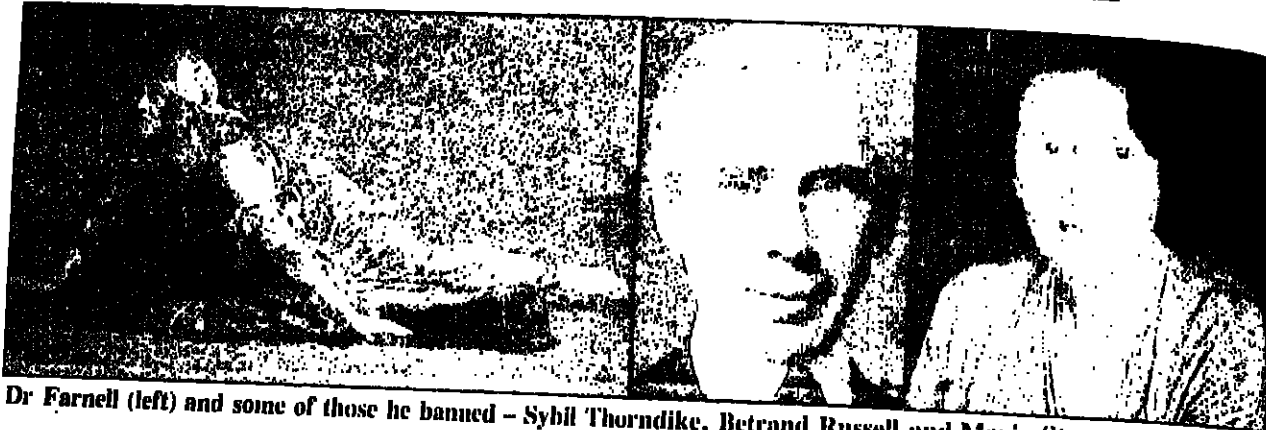
Having begun with the conventional image of Darwinism as a force for the de-mythologization of world-view, I have arrived at the unconventional image of it as a major ingredient in the mythic world-view of religious evolutionary humanism. Each of these images captures something of the truth. On the one hand, Darwinism was a secularizing force in the 19th century. It removed the ground from beneath a certain kind of natural theology, and contributed to a separation of spheres in which increasingly distinct professional communities of scientists and theologians were able to get on with their work independently of one another. But on the other hand, Darwinism does address some fundamental questions about the human condition - where have we come from? what sort of creatures are we? what are we here for? - and facing up to these issues, theologically minded biologists and biologically minded theologians have often succumbed to the temptation to re-mythologize their science in order to make it deliver generally comforting conclusions about our place and prospects in the universe.

This is to be regretted, for above all the platitudinous pontification about the progress of nature and the perfectibility of humankind it is often difficult to hear the altogether quieter and more sober voices of those who are prepared to stare straight into the abyss of nature in an effort to see it, and ourselves, for what we really are.

The author is staff tutor in biological sciences, department of external studies, University of Oxford.

Judy Mabro on political reactionary Lewis Farnell

The Oxford censor



Dr Farnell (left) and some of those he banned - Sybil Thorndike, Bertrand Russell and Marie Stopes

In November 1984 the proctors of Cambridge University issued a report expressing concern that students were not sufficiently involved in political affairs. "We are concerned about current political apathy on the part of students in the presence of numerous national and international problems", they wrote. At Oxford University the marsh confirmed that the situation there was similar.

The years immediately after the first world war and the Russian revolution were a time of intense political activity. There was an atmosphere of greater freedom, of trying to get rid of Victorian and Edwardian shackles on private and public behaviour.

In this sensitive situation a new vice chancellor, Dr Lewis Farnell, was appointed at Oxford University in 1920. He was a political reactionary determined to stop the post war move towards political agitation among students, and to protect them from "the extremists and the revolutionary party" who threatened to turn Oxford into a "cockpit of political controversy".

He perceived the Labour Party as being of a class-dividing tendency and decided to sanction several meetings of the University Labour Club.

The vice chancellor was exercising his disciplinary powers over the students in *status punitivus* and the whole issue could have remained an internal, although controversial, affair. However, the constitution of Oxford University shared with the mayor the guardianship of the city and suburbs of Oxford, and in this the vice chancellor was his deputy.

This gave the vice chancellor enormous potential powers of censorship and Farnell made use of them so extensively during his three years of office that he acquired a reputation for shackling free speech.

Farnell always claimed that as vice chancellor he acted solely for the good of the university and "to avert what I was in me". While this was undoubtedly true, the light that was in him perceived that the good of the university was under threat from left wing agitators and women. Before his term of office had ended even the chancellor, Lord Curzon, had publicly dissociated himself from one of his actions.

The first major problem that Farnell faced was the activities of the University Labour Club. He dealt with this by limiting the number of public meetings it could organize and refusing permission for Bertrand Russell to speak. Under accusations of political bias he drew up a code for all the university's political clubs which only succeeded in gaining him more enemies.

Denying any partiality whatsoever, but declaring of his action against the Labour Club that disciplinary action often does mean discrimination, he proceeded to refuse permission for a public meeting in the town hall at which George Lansbury MP was to speak. The venue for the meeting was changed at the very last minute to Ruskin College, over which the university had no powers of jurisdiction. In the event, the effect of the banning was to ensure a bad press for the university, both the authorities for attempting to stifle free speech, and rowdy right wing elements who attempted to break up the meeting, members of the New Fascist Society, of the declared aim of limiting political meetings was to calm down inflamed political passions among

undergraduates and encourage them back to their studies, it was hardly proving effective and was increasing tensions between town and gown.

When the editor of a new undergraduate newspaper putting forward a communist point of view was expelled by the university authorities, not for his political opinions but "for his advocacy of the methods of the Red Terror", the press had a field day. Headings and phrases such as "Farnellism and crime", "the modern inquisition" and "academic pogrom" abounded. As the press pointed out, the last student to have been expelled from Oxford for holding unpopular views was Shelley in 1811. None of this deterred Farnell for he had no intention of tolerating "Bolsheviks" in the university; in any case he claimed only to read *The Times*, which he could rely on for support.

As the controversy was in full swing, a new aspect of the powers of the university to censor the activities of the town arose, when the vice chancellor prohibited the performance of a series of Grand Guignol plays in the New Theatre. Although these plays had been playing to packed houses in London, with Sybil Thorndike in the main role, for them to be performed in Oxford the permission of the vice chancellor was necessary.

Farnell considered that the public censor had been deficient in his duties in allowing them to be produced in London, for they only "stirred up emotions of 'blow-job' and 'sex-lust'". He therefore banned them and was proud to say of the event later that "in spite of protests loud and fierce from various regions it stood banned; and it is one of my acts of greatest satisfaction".

The local press by this time was referring to the vice chancellor's powers as a dangerous anachronism as far as the city was concerned, and the national weekly *John Bull* questioned the wisdom of censorship which would merely revive the old animosity between town and gown.

This animosity certainly resurfaced over what was perhaps the most controversial act of censorship during Farnell's period of office. In March 1923 Marie Stopes, the pioneer of birth control, was due to speak at a public meeting in the town hall sponsored by a non-university body, the League for Constructive Birth Control. On arriving at Oxford Station to give her talk she was told that the meeting had been cancelled only that day.

On this subject Farnell had already shown his views the previous year, when he refused permission for the Oxford Student Christian Movement to hold a meeting in the Town Hall with Maude Royden, a feminist preacher on the social relations between the sexes. In his autobiography he recorded that when asked to sanction a meeting on the "overlusting sex problem" with a woman speaker he had no hesitation in refusing "because I felt that if ever a discourse on such a subject was to be profitable to our students, it must come from the lips of a man".

Though Stopes herself was accustomed to controversy over her work, Oxford was not accustomed to having the university going to such lengths to prohibit elementary freedom of speech. Such was his determination to ban this meeting that Farnell stepped in at the last minute and put pressure on the mayor to cancel it. When the cancellations notices went up on the day there were scuffles and arrests outside the town hall. Once again the meeting was transferred at the last minute to Ruskin College.

In an interview afterwards Marie Stopes commented that whatever authority the vice chancellor may have over the undergraduates, he should not be allowed to prevent the private citizens at Oxford from attending a

lecture and that the powers given to him to sanction meetings had nothing to do with the ordinary rights of the speech.

Farnell was the first vice chancellor at Oxford to face the problem of student involvement in politics. He did not recognize the extent to which war had affected the attitude of youth towards society, and deplored the growing demands to have a say in politics. Where others of his generation applauded this new sense of responsibility towards the state, Farnell believed that he could stem the tide. Unfortunately he created a precedent which was to be followed by later vice chancellors.

In the early 1930s the vice chancellor banned a meeting of free speech one day and authorized a Mosley meeting to be held in the town hall the very next day, thereby creating the impression that political partiality motivated the university authorities in their censorship.

It transpired that the vice chancellor had authorized the Mosley meeting, organised by a non-university group, on the grounds that it was useful to keep the popular illusion that his consent was necessary for public meetings.

Along with direct banning and pressure, this illusion helped the university to maintain its censorship and restrict free speech in Oxford between the wars. Of course none of this happens today but perhaps the recent Government regulations concerning student union expenditure are the new face of censorship, a barely disguised way of restricting political involvement?

The author is a member of the library staff at Ruskin College. Her book *It Ban Everything: Free Speech and Censorship in Oxford Between the Wars* is available direct from Ruskin, Oxford OX1 2HE.

Seeds of dissension

value of applied science, with the improved strains of grass and clover developed at Aberystwyth helping to make inferior pastureland productive. In order to achieve this it was often necessary to plough up land and reseed it, and Stapledon tirelessly persuaded farmers to do so.

He knew from working with the Food Production Department during the First World War how unaware government was of the need for agricultural experimentation. Already anticipating the next war, he was trying to reduce Britain's dependence on imported food. By 1940 about half a million acres had already been put to more fruitful use, and Sir Reginald Dorman-Smith, Minister of Agriculture at that time, wrote in *The Times* after Stapledon's death in 1960: "... I am convinced that without his victories starved of food."

Stapledon's work also demonstrated that hill land could be reclaimed and made fertile; and as a result of the Fourth International Grassland Conference held at Aberystwyth in 1937, his ideas became known to American agronomists seeking to fight the dust-bowl. He was already an influential figure in the Dominions, particularly Australia and New Zealand.

The wartime Government appointed Stapledon the first director of the Grassland Improvement Station in Warwickshire, where he stayed until his retirement in 1945. During this period he became absorbed by political

philosophy and history: he wanted to discover the sources of a creative power which could inspire a positive concept of democracy in opposition to totalitarianism.

The change of outlook since Stapledon's lecture on Sanderson is far-reaching, but there were influences before 1928, chief of them being his own dual nature. As well as Stapledon the scientist there was a Stapledon who looked at natural phenomena with the artist's eye; who recommended his students to develop a taste for "real poetry", and who himself wrote verse throughout his life.

Another influence had been Stanley Bligh, a barrister, psychologist and experimental farmer - who taught different perspectives to look at facts from many different points of view. Stapledon termed him an "integrator", and the concept of integration became central to his educational ideas. He believed that the purpose of education should be to bring "hand and eye, head and heart" - since intellectual development is too often achieved at the expense of emotional development.

His anxiety about the increasing dominance of science subjects within universities stemmed not just from his rejection of positivism, but from his own scientific expertise, which made him sceptical about laboratory work. The dynamic forces and infinitely complex variables of the natural environment affected seeds and grass

strains in ways which laboratory tests could not predict; ignoring these factors made pure researchers overestimate their power to control nature. Stapledon postulated a Law of Operative Ignorance - "that for every new increment of knowledge an opposite increment of ignorance comes into play" - and even urged that scientific advance should be retarded while man took stock of his limitations. Science about the tactics of human life; art about strategy, concerning itself with the values by which people should live.

Stapledon considered that the disciplines of the humanities and the arts were wider and more demanding than those of science, and advocated the establishment of university Departments of Integration in *Human Ecology* - "that every student (be brought into close intellectual contact" with both the arts and sciences".

He therefore spurned the economic instrumentalism which leads policy-makers in higher education to favour science and technology. But his defence of the arts against the claims of science, according to his biographer Robert Waller, "aroused silent resentment among many of his colleagues. One of them is reported to have said, when he learned that Stapledon wrote poetry, that he no longer trusted his scientific judgement." Government attitudes towards the arts and humanities suggest that this spirit of hostility is as powerful as ever.

Philip Conford

The author teaches in Chichester College of Technology

by Stuart Sutherland

Neural Man: the biology of mind by Jean-Pierre Changeux
Pantheon: New York, \$19.95
ISBN 0 394 53692 4

As the brain develops, the fibres of nerve cells elongate towards the target area which they are genetically programmed to contact. At the tip of each fibre is a remarkable structure - the growth cone. It was first described at the beginning of the century by Ramon Y. Cajal, a Spaniard whose brilliance as a neuroanatomist has never been equalled. He wrote: "The growth cone is a sort of club or battering ram, possessing an exquisite chemical sensitivity, rapid amoeboid movements, and a certain driving force that permits it to push aside, or cross obstacles in its way." It can also bifurcate, thus forming new branches, and it often changes direction. It wends its way towards its goal at about half a millimetre a day.

This is one of the many fascinating phenomena to which Professor Jean-Pierre Changeux calls attention in his lucid and informative review of the history and present state of neuroscience. In fact, the progress of this subject is not unlike that of the growth cone itself. It pushes out feelers which may come to nothing, it continues in a straight line for a while, and then it takes a sharp turn and constantly ramifies into new branches, few of which have yet reached their goal.

One branch that has made remarkable progress is the study of the nerve impulse. We now have an excellent understanding of the chemical and electrical forces that affect the balance of ions across the cell's membrane, the changes in the selective permeability of the membrane that give rise to the impulse: this is one of the most spectacular achievements of the neurosciences during the past 40 years.

Just as important is the more recently acquired understanding of how one nerve cell passes a signal to another. Although it had been proposed as early as 1904 that the transmission was mediated by chemicals, until the late 1930s most neurobiologists believed it was electrical. Since then there has been a spate of work on the amazingly intricate mechanisms by which a neurone releases a "neurotransmitter" at its termination with another, on the "receptors" located on the second neurone which will accept only one neurotransmitter (or a molecule of very similar shape), and on the mechanisms by which the neurotransmitters occupying receptor sites trigger a nerve impulse - or block it as the case may be.

Chemical transmission allows greater selectivity than would electrical, since a given receptor is only sensitive to one of the 40 or so different neurotransmitters known to be used in the brain. Changes in the availability or effectiveness of different neurotransmitters are now known to be implicated in some forms of mental illness, in mood, and even in sensitivity to pain. The problem here, as elsewhere in the neurosciences, is that the establishment of a connection between one does not explain the latter. A true explanation would have to specify the mechanisms that translate a change in the availability of neurotransmitters into a change in behaviour: of these mechanisms we are still wholly ignorant.

Another exciting area is the development of the nervous system. It is now well established that when the growth cone nears its destination it emits a vast number of branches: the incoming fibres spread in a diffuse way among the neurones with which they are to have contact. In the course of further development, most of these ramifying fibres die out, and the contacts between incoming cells and their targets become much more specific. The connections formed are influenced by the pattern of activity in both the incoming and outgoing neurones. If an infant monkey is exposed to an unusual pattern of visual stimulation (by, for example, allowing it to use only one eye), the connections finally formed in the visual system are drastically altered. Changeux notes that if

the activity in the incoming fibres depends on experience, then the precise destination of each would not need to be determined genetically: the fine details of the brain's connections could be controlled by the environment, including the foetal environment. This would help to explain why despite man's much greater capabilities, there is such a small difference between the genes of man and those of chimpanzees.

The idea of increased specificity with experience also fits in well with the phenomenon of "imprinting". Many activities can only be learned during a critical period in the organism's life: once learning has occurred, the system is set, the ramifying fibres have died away, leaving specific connections; and new learning cannot take place, at least not in the same way. Young children produce a babble containing many sounds that are not part of their own language, but once they have learned to talk, they find it extremely difficult to reproduce the sounds of another language, as most Englishmen who try to say "Changeux" will testify. There is an obvious but interesting possibility that Changeux does not spell out. If neural development and imprinting depend on making synaptic connections more specific by reducing the number of connections, could it be that all learning uses the same mechanism?

There is only one point at which I would like to take issue with Changeux, but before doing so it should be said that *Neural Man* is an excellent book. It is remarkably clear and easy to read, and his descriptions of recent work are enlivened by his historical knowledge. His account is well balanced and he never becomes enmeshed in detail - no easy feat in the area of neuroscience. And the translation is admirable. I know of no better book to serve as a guide to neuroscience for the layman.

The cavil is as follows. Changeux believes that the mind and the brain are one and the same thing: in itself this is innocuous if unprovable. But he goes on to write, "What is the point of speaking of 'Mind'...? It is only that there are two aspects of a single event which one describes in the introspective language of the psychologist or from the language of the neurobiologist." This statement contains two serious flaws which are repeatedly made by neurophysiologists.

First, the fact that one discipline is "reducible" to another does not mean that the higher-level discipline has no need of its own concepts and methods of explanation. The behaviour of all molecules is determined by the fundamental particles of which atoms are composed, but it would be folly to attempt to explain the structure of DNA in terms of fundamental particles. Chemistry needs its own higher-level concepts, laws and terms in order to explain what happens when atoms

sphere successfully taking over most of its functions. Unfortunately this flexibility of deployment of function sharply reduces as age advances. If we knew more about how re-deployment of function is possible, and why it is gradually lost as age advances, we might hope to repair the tragic incapacities following strokes and eventually perhaps even to keep old brains functionally young.

Lerner is clearly a library freak. He takes his mandate from a definition of plasticity by J. M. Baldwin and E. B. Poulton in J. M. Baldwin's 1902 *Dictionary of Psychology* as "That property of a living substance, or of an organism, whereby it alters its form under changed conditions of life". This trite generality acts upon him like a whiff of harmless gas upon an enslaved solvent enquirer. From the preface in which it occurs we can track his meandering path through the library stacks by the spoor of his chapter headings: "The life-span view of human development: philosophical, historical and substantive bases"; "Genemarking, recombinant DNA technology, and gene transfer: towards true gene therapy"; "Neuroanatomical bases of human plasticity"; "Human neurochemistry and the role of neurotransmitters"; "Evolutionary biology

and hominid evolution"; "Comparative-developmental psychological bases of plasticity"; "Individual and group interdependencies"; "Towards future multidisciplinary efforts"; and finally, and portentously, "Conclusions: On the limits of plasticity and on the plasticity of limits".

This might have been a useful book if it had undertaken a lesser task. Each chapter might have provided a vignette of a distinct and important field, bringing a naive reader to a point where he was briefed to read and think for himself in an unfamiliar area. This is not done. In the areas in which I am competent (chapters two, four, six and seven) the author seems merely to rehearse simplistic annotations of papers he has read. He seems to assume that whenever he provides a list of five or more references, he has both begun and completed an argument. He relies heavily on complex illustrations which are cryptic in themselves and have no clear relation to any argument in the text.

Unfortunately, Lerner clearly intended to make a different, much more significant contribution - by deducing from a survey across several of the multitude of possible levels of description of biological and psychological adaptation and change (in his rather

BOOKS

How a thought crosses the mind



Jean-Pierre Changeux

are combined into molecules. Similarly, the explanation of psychological phenomena requires the use of appropriate concepts like "grouping, short-term store, line-finding, the homotopy", and so on. Moreover, a complete wiring diagram of the nervous system would be of no help whatsoever in explaining behaviour. It would be as impossible to use it for this purpose as to write a complex program using machine language, for no programmer could keep track of the millions of basic operations that need to be carried out. Instead, programmers use much higher-level instructions (each of which may require the execution of thousands of instructions in machine code); provided the programmer understands the higher-level instructions by which they are implemented. It follows that there is a sense in which psychology cannot be reduced to neurophysiology: it will always have its own concepts and theories, although they must be compatible with neurophysiological findings, and the psychologist would be foolish if he did not gain whatever

clues he could from neurophysiological discoveries.

The second flaw in Changeux's statement is his suggestion that there are only two languages in which to describe the brain or mind - the first neurophysiological, the second introspective. There is a third possibility - behaviour and all aspects of the mind that can be exhibited in behaviour could be explained by theories that specify a series of functions or operations. David Marr, for example, has put forward rigorous theories of this sort to explain how the brain extracts lines and edges from the visual image and how stereopsis is achieved. The theories may not be completely right, but they are rigorous and they have thrown a new light on the nature of the tasks that the brain accomplishes and on the nature of the operations it must carry out in order to do so.

Unfortunately, Changeux does not stop there. He occasionally gives his own neurophysiological explanations for psychological phenomena. He resurrects Donald Hebb's theory that perceptions, ideas and emotions depend on assemblies of cells firing in

sequence or in resonance: one idea may trigger off another through connections between two cell assemblies. For once, Changeux gets his history wrong - the neurophysiological window dressing cannot conceal the fact that all we have here is Aristotle's laws of association under another guise with none of their vagueness removed. How do these ideas help to explain any specific phenomenon? They do not bear on such issues as how we perceive depth from motion, how a child learns the syntax of its language, how a mathematician proves a new theory or why people suffer from sexual jealousy. They are in fact wholly empty and if Changeux came across such woolly philosophizing about the workings of a nerve cell, he would be rightly incensed.

He also seems to believe that if a physiological correlate of a mental act can be found, the mental act is explained. It is not. There are cells in the monkey cortex which fire only when a face is presented to the animal. This discovery tells us nothing about how the faces are recognized, regardless of the angle from which they are seen, the lighting conditions and their expression. To explain face recognition it is necessary to specify the operations that, starting from the retinal image, result in the firing of the "face" cells, despite the vast differences in the images to which faces give rise.

One of the many recently discovered devices for examining brain activity without invading the brain itself is positron emission tomography (PET). A radioactive isotope of glucose is injected into the blood, and by scanning positron emissions from the brain the areas in which there is increased blood flow can be mapped: these areas are those in which there is most neural activity. Changeux suggests that PET scans may throw light on the working of the mind, but in fact all they can do is show which areas are active when a particular mental activity is in progress. Except under very special circumstances, this information is of no interest to anyone except a neurologist: in itself, it is of no help in unravelling the operations that enable the brain to govern behaviour.

It would of course be reassuring for the psychologist if there were direct neurophysiological confirmation for his theories, but there are very few mental or behavioural phenomena for which this has happened - colour vision is one and even there the explanations are far from complete. Changeux is an optimist, but despite the dramatic progress in our understanding of the brain which he so delightfully describes, the goal of explaining the human mind remains as distant as ever.

Professor Sutherland is director of the Centre for Research on Perception and Cognition at the University of Sussex.

Ability to adapt

On the Nature of Human Plasticity by Richard M. Lerner
Cambridge University Press, £17.50
ISBN 0 521 25651 8

Psychologists and neuroscientists, misled by an enticing title, might rush to buy a book they take to be a timely discussion of a crucial topic: lower animals, notably salamanders, not only show remarkable ability to regenerate limbs but can even regenerate damaged tissue in their brains and central nervous systems. Alas, apes and humans cannot replace lost neuronal tissue; but when some parts of their brains are permanently damaged other (surviving) areas somehow take over functions that they do not normally carry out, and have not previously served.

This ability to compensate for brain damage is particularly striking in early childhood, when even loss of one entire hemisphere of the brain may be compensated by the surviving hemi-

strained term "levels of plasticity" principles, common to all, which illuminated some of them and perhaps guided future research in any. But he can hardly be blamed for not succeeding in such an ambitious plan. It is a pity, however, that his chapters follow each other as brief, independent and unremarkable reviews of disparate topics.

Perhaps the last comment should be left to Paul Baltes, who writes in his very careful and tasteful foreword that "were the range of plasticity to be fully understood, the major raison d'être for further research on the nature of development would be in jeopardy". In other words, if Lerner had succeeded in the difficult task he set himself, there would be nothing further for any of us to say. I am glad to be able to reassure anxious colleagues that they need not buy this book to check whether or not to seek early retirement.

Patrick Rabbitt

Patrick Rabbitt is professor of gerontology and cognitive psychology, and director of the Age and Cognitive Performance Research Centre at the University of Manchester.



Sir George Stapledon

"Science for far too long has been left to run its own unfettered course, absorbing to itself far too large a share of the funds at the disposal of the universities and blithely ignoring the other faculties of learning... Unless the universities are prepared to stand by and watch their glories develop into nothing more than glorified technical colleges - and that would be the herald of a wholly technical and utterly uncultured age - then drastic reforms are essential."

It would be easy to assume that these words were a response to current proposals for priorities in university expenditure. They would then be dismissed by supporters of those proposals as the sentiments of academics pursuing studies economically irrelevant to a competitive world. What makes the above quotation significant, however, as a criticism of higher education policies, is that its author had no vested interest in defending the cultural role of the universities, and was himself a distinguished scientist.

The writer in question, the agronomist Sir George Stapledon, expressed his views on the role of the universities in the 1940s, but he saw clearly, from his philosophical perspective of "human ecology", the issues involved in the present conflict over priorities in the university sector.

It is an irony of Stapledon's career that his faith in the capacity of science to benefit mankind diminished as his own scientific reputation grew. After taking a degree in natural sciences and an agricultural diploma at Cambridge, he worked on grassland surveys, first at the Royal Agricultural College, Cirencester, then, from 1912, at Uni-

versity College, Aberystwyth, where in 1919 he was appointed professor of agricultural botany and first director of the Welsh Plant Breeding Station.

In his 1943 book *The Way of the Land* he spoke of the need to fight for "Sanderson's ideal of the affairs of the world being run by only men of scientific outlook" and - so greatly were his ideas to change - expressed the view that "our universities can do much greater things in the service of humanity than slowly prove to industry what applied science can do for it."

The work which Stapledon directed over the next decade, bringing him his knighthood in 1939, demonstrated the

BOOKS

Coping with grief

Grief and English Renaissance Elegy by G. W. Pigman III
Cambridge University Press, £19.50
ISBN 0 521 26871 0

My reading of this book has, curiously and appropriately, been accompanied by attendance at three funerals, one of them for the distinguished and much-missed colleague, Gámini Salgado. It is appropriate because this slim book, as its title suggests, is about two things which, for all the obviousness of the connection, are rarely thought of together, that is, the experience of grief and mourning and the literary activity of writing, and reading, elegies.

Pigman makes the simple but hitherto largely unconsidered point (despite a number of studies on death and the *ars moriendi* tradition) that "a clear conception of the attitudes towards grief in Renaissance England is important for understanding the feelings which bereaved individuals were likely to experience and the expression of these feelings in the elegy of the period." In other words, we are invited seriously to respond to Renaissance elegies not merely as verbal and generic artefacts, noting literary *topoi* and conventions, but also as expressions which seek to cope, under various social, theological and cultural pressures, with the facts of death and human loss.

Ideas about mourning in Renaissance England may well, for most of us, be largely restricted to the response of Jonson's "Of Death".

He that fears death, or mourns it, in the just, Shewes of the resurrection little trust.

or of Feste's wailing of Olivia with "The more fool, madonna, to mourn for your brother's soul, being in heaven". But it is clear, as Pigman demonstrates, that Jonson's "rigorism" is far from representative of the early 17th century but is a throwback to the 1550s. The questions Pigman raises are generated by reflection of new lines from the most famous of all Renaissance elegies, Milton's "Lycidas".

And O ye Dolphins, waft the hapless youth.

Weep no more, weep no more, shepherds, weep no more, where "the leap from plaintive helplessness to authoritative consolation" has proved such a problem for so many of its shifts. If Milton is opposing Christian consolation to pagan mourning, then what was Christian about mourning, and what was pagan about mourning, and what were the attitudes of Milton's contemporaries to consolation and mourning? The book springs from these sorts of questions.

Its "narrative" traces the way in which attitudes towards mourning change towards the end of the 16th century, moving from acute anxiety about grief, which tends to be regarded as subversive to the rule of reason and to domestic and social order (the "angry consolator", for instance, of Erasmus's *De conscribendis epistolis* who shames the bereaved into pulling himself together), to the emergence of

The painter Edward Burra (1905-76) drew this portrait to illustrate a letter he wrote from New York in 1933. It appears in a new collection of Burra's letters, *Well, Dearie*, edited by William Chappell and published by Gordon Fraser at £14.95.

a more compassionate and less anxious attitude towards mourning, in which sympathy for bereavement is more prominent than anxiety at exceeding the bounds of moderation. All this is documented with scholarly precision and numerous examples, particularly of letter-writing treatises and moral al-theological tracts (though Pigman says nothing about the possible effects of the church's burial liturgies). In terms of elegy, the change is shown in the way in which most 16th-century poets are disturbed about the mourning contained in their poems and generally turn upon themselves in rebuke for indulging in sorrow, whereas towards the end of the century, defending and persistent and an ideal of personal expression of grief begins to replace critical self-restraint.

When Pigman turns his attention to "Lycidas" he is able to offer an ingenious and utterly convincing view

that there is in fact a change of speaker here, that the speaker of "Weep no more, weep no more" is Lycidas himself, whose spirit (and not St Michael of "the guarded Mount" as is generally thought) is the Angel of "look homeward Angel now". As "consolator" he is mild and sympathetic towards grief, not berating; the angry protests and sorrow which have constrained the poet's lament are still by a voice that proves Lycidas is not dead, "sunk though he be". Unlike the common contrast between the wretchedness of the survivors and the unconcerned joy of the dead in heaven, "Lycidas" suggests, through "the still be attached to and protective of their living friends and mourners."

R. D. Bedford

Dr Bedford is lecturer in English at the University of Exeter.

Behind the news

Procopius by Averil Cameron
Duckworth, £29.50
ISBN 0 7156 1510 7

Some one hundred and fifty years after the capture of Rome by Alaric history was still being written among the Byzantines in a recognizably classical fashion - not only in classicizing Greek, but on the topics favoured by ancient Greek historians and by a man who took every opportunity to remind his cultivated readers of their shared classical culture. In Procopius' work the whole gamut of ancient historians from Herodotus onwards lived on. So

did the theme of the aggrandisement of the Roman empire, which had been the mainspring of the histories of Rome. So too did the outlook of the senatorial aristocracy, the social and intellectual elite, conservative and suspicious of both the proletariat and those who conciliated it.

Yet Procopius was a Christian, who believed both in a providential god and the current emperor and empress, the equivalent of mortal men. And Procopius did not only write an orthodox (by classical standards) history of contemporary wars, profiling like Thucydides and Polybius before him from close personal involvement - on the Persian staff in Mesopotamia, Africa, Sicily and Italy. His *Secret History* is a memoir of the stories behind the news in that period, where a laudatory

and sardonic view is given of the protagonists on the Byzantine side, which casts a cloud over the whole imperial enterprise undertaken by Justinian. By contrast in his *Buildings* he produced a conventional celebration of Justinian's achievement as a civilizing Christian power. Averil Cameron's solution to the Procopius problem is to argue that first and foremost he was a Byzantine Christian from the 6th century AD, not a lost soul from a previous era. While conceding the difficulties in positing a psychological development, she illustrates with Belisarius (something apparent at the end of the *Wars* as well as in the *Secret History*). As for Justinian, in Procopius' eyes he was a victim, a dispenser of light and the deprived force of the *Secret History*. Justinian's reign was repressive and up to a point anti-intellectual (in

spite of his codification of Roman law). Nor was Procopius the only critic, as Cameron shows in her helpful discussion of John the Lydian. Procopius is excellently portrayed as a child of his age. On the other hand, delusory, may remain a little obscure cannot read him in the original. In his Procopius makes plain his competition language. Yet his whole attitude to the world is different. While Thucydides wrote to provide the groundwork for such aspirations were for Procopius, head-in-clouds philosophizing; the Echoes of earlier writers in thought as well as language sound. The early digressions have a Herodotean air, while the geography at the beginning

of *Wars VIII* could have come from Arrian. Nevertheless, the subject-matter of the history is essentially in the Roman tradition, even that of the *Secret History*, whose mud-slinging has its counterparts in Ammianus and the earlier in the invectives of imperial satire and republican pamphlets. Indeed Cicero's *Anecdota*, which contrasts with his published speeches and commentaries in treating men like Caesar, are an excellent parallel.

Procopius claimed that artifice characterized rhetoric, imaginative creativity poetry and truth history. This book has above all shown that these ideals were not separable for Procopius but complementary.

Andrew Lintott

Andrew Lintott is a fellow of Worcester College, Oxford.

Essential history

The Cambridge History of Classical Literature volume one: Greek Literature edited by P. E. Easterling and B. M. W. Knox
Cambridge University Press, £47.50
ISBN 0 521 21042 9

The writing of literary history - especially English literary history - has long lain under a cloud of disapproval, notably between the 1920s and 1960s. In the eyes of the New Critics and other devotees of the close local analysis of a text, such a discursive treatment of literature was fatally open to criticism: self-indulgence and unsubstantiated generalizations - an undisciplined ramble among the masterpieces. This point of view arose because the New Critics - the lemonsque school of criticism in T. S. Eliot's phrase - were striving to discover what residuum is left after a text has been referred to its historical setting. It is not difficult to see how such a controversy could be generated in English studies, but the problems which confront the modern commentator on a classical Greek text are plainly very different.

One obvious difference is that the New Critics' approach is best, if not exclusively, suited to the short poem, but far less so to works of monumental proportions, such as an epic, a dramatic trilogy or a history. Another is that classical Greek literature did not spring from a compact national culture, but rather from a great diamond-shaped diaspora, whose points rested on the Greek mainland, Asia Minor, Egypt and Southern Italy - hence a literature exceptionally diverse in dialects, environments and political backgrounds. Yet another is that our knowledge even of the acknowledged ancient masterpieces is very incomplete and changes constantly in the light of fresh historical evidence or archaeological discoveries. Such conditions surely make an up-to-date historical approach indispensable, and require that the skills of the historian and the critic should be reconciled.

Cambridge History offers, and, as might then be expected, the chapters which are outstandingly good are those which provide a thorough historical treatment of the subject, namely those on Homer, tragedy, comedy, history

and the survey of Homer. Professor Kirk begins from the currently accepted conclusions that the Greeks were exceptionally late in developing a script for literary purposes, that both the *Iliad* and the *Odyssey* were composed by a poet or poets who, like their audiences, were effectively illiterate, and that both were conceived and executed on a scale which completely dwarfed any other epic composition of the period. The *Iliad* is described as the plan and the interaction of plot and language are made clear. Such a detailed synopsis is rightly found unnecessary for the *Odyssey*, and instead the author dwells on the differences of theme, mood, language and narrative technique which distinguish the two poems. The whole forms an admirably lucid and well-balanced commentary.

The study of Greek tragedy extends far beyond the text alone, and the coverage here includes articles on the tragic form and on the conditions of

performance, as well as appreciation of the three classic tragedies, and others known only from fragments. The essay on Aeschylus, apart from general assessment, discusses the recent re-dating of the *Suppliants* to be regarded as Aeschylus' earliest play and the currently disputed authenticity of *Prometheus Vinctus*. All three essays have new things to say on the topics of how the playwrights handled the components of the Aeschylus drama as well as on their sharply distinctive conceptions of the relations between man and the divine will.

The chapter devoted to comedy provides an extremely thorough account of the development both of the Old Comedy and the New, and often and uncritically seen as a case study, was probably regarded by his elders as a trendy young man. However, the section which traces the transition from Aristophanes to Menander does not (surprisingly) relate this to the decline in Athenian power and the consequent effect on the political and social life of the city.

The section which deals with historiography, in particular the contribution of Professor Immerwahr on Herodotus and Thucydides, stands out for its combination of close criticism with grasp of the events that they describe, is particularly impressive. While most of the chapters form a distinguished team of British and transatlantic contributors reach a consistently high standard, perhaps the least satisfactory feature of the volume is its planning in terms of the political and historical background. Thus, of 20 sections covering the period from Homer to the 3rd century AD, the central core (sections 10-17) deals with 5th and 4th-century Athens. There are of course many references made in passing to the supremacy of Athens in the major literary forms, and readers in unexpected places of the Athenians' own awareness of their greatness. But there is no integrated discussion of the place of Periclean Athens in the most highly developed example of the Greek city-state in the evolution of the Greek literature, nor, for that matter, of the contribution of other varieties of the Greek polis; on the other hand the effect of the rise of Alexandria as a cosmopolitan metropolis serving a monarchical political system is excellently summed up in Professor Bullock's survey of Hellenistic poetry.

Albin Lesky's admirable *History of Greek Literature* is now nearly 20 years old. By comparison the Cambridge team has the advantage of more widely spread and more up-to-date specialist knowledge, but lacks something of the shapeliness of design and integration of content which a single author can achieve. The present volume aims to appeal to classicists at all levels, and allowing for the reservations entered above, this intention has been effectively fulfilled. The general reader will find much expert elucidation, and the specialist plenty of new information. Translations are the work of the author of each article, a procedure which avoids many controversial literary judgements. The biographical and bibliographical notes are sound and a sensible length.

Ian Scott-Kilvert

Ian Scott-Kilvert was formerly director of literature at the British Council.

BOOKS

Industrial patterns

British Economic Growth during the Industrial Revolution by N. F. R. Crafts
Clarendon Press: Oxford University Press, £19.50
ISBN 0 19873066 7

From time to time a book appears which so radically and successfully transforms current orthodoxies that it is certain to stand as a seminal work for many years to come. This is just such a book. Original, stimulating and thoroughly, yet sensibly, provocative, Dr Crafts' volume makes a major contribution to the historiography of the British industrial revolution and its long-term consequences and must surely become required reading for all students of modern British economic history.

By means of a painstaking synthesis and an imaginative, extended reworking of the most recent, sophisticated statistical data teased out of such fragmentary sources as exist and by carefully contrasting the character of Britain's early industrial development with that of leading European economies later in the 19th century, Crafts presents us with an industrial revolution very different from the one portrayed in the standard textbooks and in sharp contrast to those who believe that the process of early modern economic growth always followed the path pioneered by Britain, quite unlike anything subsequently experienced elsewhere in Europe and the third world. In doing so, he offers fascinating new insights into the possible relationship between Britain's precocious start towards industrialization and its much publicized economic problems in the late 19th and 20th centuries. It is difficult to think of another recent publication in economic history which can justifiably claim to be so consistently illuminating and challenging over such a broad front.

As a result of Dr Crafts' endeavours, little surely now remains of the classic notion of a British industrial revolution characterized by a dramatic rise in output, beginning around 1780 and based on widespread innovations in technology and soaring, generalized increases in productivity. Instead, we are presented with a picture of gradual, almost painful development, the origins of which lay far back in the 17th and early 18th centuries, and of an economy which, until at least the 1820s, struggled with only moderate success to cope with rising rates of population growth and the burdensome, additional demands of the Napoleonic wars for a share of all too scarce resources. Prior to the second quarter of the 19th century, the growth of productivity in its manufacturing sector was modest and revolutionary innovations in technology and methods of organizing labour for production restricted to a very narrow band of textile industries, primarily cotton textiles and the refining of iron ore. Over manufacturing industry as a whole, additions to the quantity of labour and capital inputs entered in the productive processes made a more significant contribution to rising output during the initial decades of the Industrial Revolution than did improvements in the efficiency with which these inputs were used.

Rather surprisingly, it was in agriculture, not industry that productivity advanced so most pronounced and where rising output depended more on improvements in the quality than the quantity of labour and capital resources applied. The ability of the economy to achieve such a substantial and, compared with other economies, unusually early transfer of resources out of agriculture into manufacturing in the course of the 18th and first half of the 19th centuries depended almost entirely on the capacity of its agricultural producers to introduce cropping systems which permitted the more effective use of existing manpower and capital supplies.

Even so Crafts reminds us, we ought not to exaggerate the part played by agriculture in Britain's industrial revolution. Both as a source of demand for manufactured goods and as a supplier of capital for investment in other sectors of the economy its

significance is frequently overstated in traditional accounts. Despite the continued increase in the absolute level of domestic food output, as early as the first half of the 19th century Britain relied on imported foodstuffs for between a sixth and a quarter of its total food needs. Nevertheless, the fact remains that Britain was able to meet the cost of food imports only because the relative efficiency of its agricultural manpower for the production of industrial goods for sale overseas. Long before the middle of the century, agricultural development, and the transformation in the general structure of the economy which stemmed from it, had created an economic system more than normally dependent on overseas trade for its continued prosperity. It was, however, a prosperity based on a dangerously narrow range of exportable industrial commodities in the production of which, complex and arguably inexcusable reasons Britain certainly enjoyed a transient, and perhaps largely fortuitous, comparative advantage.

The British industrial revolution, therefore, differed from its successors in a number of significant respects: in its unusually modest levels of industrial investment and productivity; in the relative efficiency of its agricultural sector; its inability to generate more

than a moderate increase in real incomes; the uniquely rapid rate at which resources were transferred out of agriculture and its disproportionate reliance on international trade for food and raw materials and for a restricted range of manufactured goods. The long-term implications of these distinguishing features, Crafts suggests, are potentially very important.

Assuming that his description of the character of Britain's late 18th and early 19th century economy is correct, historians will need to radically rethink their explanations both for the industrial retardation during the Edwardian era and for economic depression and the persistence of high rates of unemployment in the decades between the two world wars. It is customary to account for the failings of the 20th-century British economy largely in terms of the disappearance of an earlier capacity for dynamic industrial entrepreneurship and the high levels of productivity and innovative investment which naturally accompanied it. Such an explanation sits most uncomfortably with Dr Crafts' picture of an industrially revolution characterized, except in one or two cases, by modest levels of productive efficiency and a heavy dependence on the production and export of a very limited range of staple manufactured items. Arguably,

too, these inherited characteristics played their part in creating an economy which, in a later age, lacked the necessary flexibility to respond successfully to the emergence of overseas industrial competition. In short, the British economy did not so much lose its way as remain locked into traditional habits which, in time, became increasingly and inevitably outdated.

Dr Crafts' interpretation of the nature and possible consequences of Britain's industrial "take-off" stands or falls, of course, on the validity of the statistical data on which it is based. In view of the partial and often highly tenuous character of most of the available sources, any attempt to measure secular variations in the rate of growth of aggregate and levels of productivity must be considered a hazardous exercise. While the statistical foundations of Crafts' work are undoubtedly sounder and more extensive than those of any previous study, it would be foolish to treat them as totally infallible. The author himself admits that different, and no less valid, assumptions and procedures for compiling the data would certainly produce somewhat different results. In their essentials, however, if only because the exhaustive work on which they are based is unlikely to be much improved in the foreseeable future, it is difficult

to see how the present findings can be effectively challenged.

Dr Crafts' book should not be seen as a conventional textbook which attempts to treat all aspects of Britain's initial experience of industrialization. Although offering some useful comments on why the economy developed in the way it did, the book has relatively little to say about the underlying causes of industrial "take-off". Crafts deliberately avoids the question "why did Britain have the first Industrial Revolution?" largely, it seems, because he believes this to be a question that can never satisfactorily be answered. However, in showing the extent to which the economic structure of pre-industrial Britain already differed from that of other societies, Dr Crafts himself goes some way towards supplying part of the possible answer. For this, and for the numerous other revealing suggestions and conclusions it contains, the book stands out as a major contribution to scholarship, certain to encourage new and rewarding lines of inquiry. It should be read by all serious students of the history of economic growth.

N. L. Tranter

Dr Tranter is senior lecturer in history at the University of Stirling.

Finding markets

UNCTAD and the South-North Dialogue, the First Twenty Years: essays in memory of W. R. Mallonowski edited by Michael Zammit Cutajar
Pergamon, £25.00
ISBN 0 08 028144 3

The United Nations Conference on Trade and Development (UNCTAD) was founded in the 1960s in response to the concern felt by less developed countries (LDCs) about the poor demand prospects for their traditional primary commodities, and the restricted opportunities for the third world to secure markets in industrial countries for processed primary commodities and manufactures. There was also dissatisfaction with existing international institutions dealing with trade and development, notably GATT (the General Agreement on Tariffs and Trade) but also the World Bank and the International Monetary Fund.

Starting with "UNCTAD 1" in Geneva in 1964, UNCTAD has convened a series of mammoth conferences on development issues every four or five years, but it is also a permanent organization with a secretariat and headquarters in Geneva, whose work has done much to formulate, and to express, third world thinking on development. This book is a collection of 14 essays covering various aspects of UNCTAD's activities over the last two decades, particularly prim-

ary commodity policy, market access for LDC exports, and economic co-operation among developing countries, but also finance, freight and technology questions, and the legal aspects of UNCTAD's work. It honours the memory of one of the founding fathers of the organization. The general approach of the book is one of description and informed comment, rather than sustained economic and political analysis, and, despite claims in the preface to the contrary, it has the flavour of an "in-house" work in which little real criticism appears. There is also considerable duplication between contributions.

UNCTAD's main solutions to LDCs' trade problems were the formation of international commodity agreements to stabilize and (implicitly) to raise prices, and the securing of preferential market access for other LDC exports. These solutions were much influenced by the writings of UNCTAD's first secretary-general, the Argentinian economist Raúl Prebisch. Prebisch was also associated with the doctrine of import substituting industrialization - that LDCs should protect their industries by tariffs and other trade controls - which he had pressed so strongly when previously at the UN Economic Commission for Latin America. Following the demonstration of "commodity power" by the oil-producing countries, UNCTAD's ideas were given new expression by the United Nations in its New International Economic Order resolution in 1974.

In fact, even before the current recession and the world debt crisis, UNCTAD's achievements had been slight. Perhaps the greatest has been

Demand for books

Publishing in the Third World: knowledge and development edited by Philip G. Altbach, Amadio A. Arboleda and S. Goblath
Mansell, £28.50
ISBN 0 7201 1760 7

Third world countries have witnessed a spectacular increase in literacy rates in turn occasioned by a very large expansion in the demand for books. Publishing in the Third World provides a fascinating account of how countries have risen to this challenge.

After a summary chapter the editors deal in turn with the three major themes of textbook publishing, distribution, and the vexed question of copyright. Then follow regional and country chapters covering the world. Some are excellent, especially one on South Africa. There is also a chapter on Japan, no longer a third world country, but the one non-western country to have established a fully articulated and successful publishing industry which could serve as a model to the rest. Finally there is a comprehensive and beautifully arranged bibliography as befits a book that aims to

portray the present "state of the art" - and does so very well.

Before the literacy explosion, which began thirty years ago, books were imported directly, and are supplied by the local paper merchant, who passes on the cost of import duty. The greatest handicap is the virtual absence of a non-educational market for books. Only a small minority read for pleasure and bookshops are a rarity. Publishers are therefore almost totally restricted to the educational market.

Now and again the authors of this book are a little paranoid on behalf of third world publishers when suggesting, for instance, that they have also to contend with highly subsidized books at university level provided by foreign aid. Publishing for a whole region to overcome such a handicap is difficult in an age of nationalism where governments object to textbooks imported from a neighbouring country with a differently slanted political regime. But smallness of some markets does not by itself explain all the observed differences in response - nor do differences in the degree of literacy. Argentina, for example, with a very high literacy rate publishes a great deal but so also does India, still substantially illiterate, and she exports to neighbouring countries as well.

As the book makes clear, there are other obstacles to the growth of indigenous publishing. The big multinational publishing houses can buy their paper more cheaply than newly established small publishers. If the multinationals publish locally they can in addition



UNCTAD in session, 1966

the Generalized System of Preferences whereby the EEC, Japan, and later the US gave non-reciprocal tariff concessions to LDC exports, but with many limitations and safeguards. A more striking move was the agreement to set up a Common Fund to finance buffer stocks to intervene in commodity markets, but this awaits ratification by a sufficient number of countries, even in its present financially watered down version.

In the 1980s the climate of opinion has turned against UNCTAD. Western governments have become increasingly reluctant to give LDCs help of any kind, and the World Bank and the IMF have been much influenced by academic economists advocating "free market" solutions to the development problem. Thus LDCs have been urged to dismantle their import protection

and seek export expansion like "newly industrializing countries" such as Taiwan and Singapore. But writers in the present volume wholly dismiss the experience of those countries on the grounds that they have authoritarian regimes. Readers searching for answers to these implicit criticisms of UNCTAD's views, or indeed to criticisms made by the Marxist left, will be disappointed. The discussion of commodity policy in the chapters by Sidney Dell and Alfred Maizels do little but state UNCTAD's long-established position, though they will both be of use to undergraduates seeking information on UNCTAD's activities. More interesting is Moses Adebajo's chapter on economic cooperation between developing countries - a way of the "South" reducing its dependence on the developed "North" - which emphasizes UNCTAD's role in helping regional groupings of LDCs exchange information on their problems and the possibility of a global system of trade preferences among LDCs. Also important is the impetus given by UNCTAD to the development of indigenous technological capacity in LDCs by some valuable research it has commissioned in that area, described in Surendra Patel's chapter. On third world debt, Iqbal Hagi shows how the major debtors like Mexico and Brazil have been reluctant to cede UNCTAD a mandate, feeling they could get a better deal individually than collectively. Prebisch's own (regrettably) short piece, to which many will turn with interest, does concede that there have been some excess in important substitution policies in particular cases, but goes on to advocate it again, though more in the broader context of economic co-operation between LDCs.

In spite of some favourable signs of new ideas, one is left with the sense of an organization which has rather lost its way in the present hostile environment. Indeed, one contributor, Ignacy Sachs, describes the most positive result of the most recent conference - UNCTAD VI in Belgrade in 1983 - as being that "UNCTAD survived as an institution without major paralysis".

Walter Elkan

Walter Elkan is professor of economics at Brunel University.

John Thoburn

Dr Thoburn is senior lecturer in economics at the University of East Anglia.

Overseas

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UNIVERSITY OF MALAWI
University Office

PRINCIPAL: KAMUZU COLLEGE OF NURSING

Applications are invited from suitably qualified candidates for the post of Principal of Kamuzu College of Nursing which falls vacant on 31st December 1985.

Candidates must possess an advanced degree in Nursing and/or Nursing Education as well as considerable practical experience, and should be able to demonstrate that they have the drive and initiative to be able to provide the required leadership for the College.

The Principal will be responsible to the Vice-Chancellor for implementing the academic programmes approved by Senate of which he/she will be an ex-officio member, and for the organization and well-being of the College.

The initial appointment will be for four years, and the basic salary will be determined on the basis of qualifications and experience within the scales for the Principals of the Constituent Colleges. A non-domiciled candidate will, in addition, receive an appropriate University addition, as well as a 25 per cent gratuity at the end of the contract.

Further particulars for this post, and for the University of Malawi in general, can be obtained from the University Registrar, P.O. Box 278, Zomba, Malawi, to whom applications should be sent not later than 30 September 1985.

(020618)

Post
Overseas

This post is funded under Britain's Aid Programme to developing countries

Bangladesh

Senior Technical Adviser
Bangladesh Technical Education Project
Technical Teacher Training College (TTTC)
Dhaka

Duties: to lead a team of British subject specialists in helping set up a new Technical Teacher Training College which is to provide pre-service and in-service courses for staff of Polytechnics and Engineering Colleges in Bangladesh; to liaise with the Chief Technical Adviser, the Project Co-ordinator and the Director of Technical Education on implementation of the World Bank technical teacher training programme; to advise the Technical Education Board and assist with the development of the curricular examinations and methods of evaluation; to assist with general development of college administration and finance in collaboration with the Director TTTC; to help with the selection of equipment and advise on the training of staff in the UK; to teach on appropriate teacher training courses in specialist subject areas.

Special Qualifications: male candidates, preferably aged 45-55, should have a degree-level qualification in Engineering and an advanced level qualification in Technical Teacher Education. Considerable experience of all aspects of Technical Teacher Training at a senior level in the UK and overseas is essential.

Salary: £10,203-£22,408 per annum.

Overseas Allowances: nil-£1,544 depending on salary and marital status.

Benefits: salary free of UK income tax; free family passages; children's education allowances and holiday visits; free furnished accommodation; employer's contribution to a recognised superannuation scheme or an allowance of 11 per cent of salary in lieu.

Contract: for three years with the British Council. Closing date for applications: 13 September 1985.

Reference: 85 K 111

For further details and an application form, please write, quoting the post reference number to:

Overseas Educational Appointments Department,
The British Council, 90-91 Tottenham Court Road,
London W1P 0DT.



AUSTRALIA

SENIOR LECTURER IN
TEXTILE DESIGN

As a result of the Senior Lecturer taking up the position of Principal Lecturer at The Riverina College of Advanced Education, the position of Senior Lecturer is now vacant. This position is tenured.

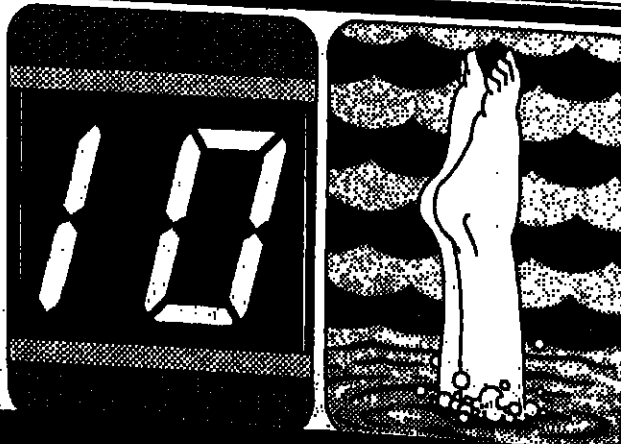
The appointee will be responsible for the Bachelor of Arts in Textile Design course and for the development of textile related post-graduate studies, research and development.

It is expected that applicants will possess an appropriate degree or equivalent qualification and have practised as a textile designer to be an advantage.

Further information can be obtained by contacting Mr. John Saint, Head, Department of Design - telephone (03) 680 2825 or by writing to the address below.

Salary Range: A\$35,203 - A\$41,029 p.a.
Reference No. 182/18/AN. Applications close: 31/10/85
A Position Description should be obtained from Personnel Services by phoning (03) 680 2337 or telex AA36406; written applications to Senior Appointments Officer:
ROYAL MELBOURNE INSTITUTE
OF TECHNOLOGY LIMITED
GPO Box 2476V, Melbourne, Vic. 3001, Australia. (020619)

Industry and Commerce

SOUTH AUSTRALIAN INSTITUTE
OF TECHNOLOGYPROFESSOR/ASSOCIATE PROFESSOR
OF MECHANICAL ENGINEERING

Applications are invited for the position of academic leader of the School of Mechanical Engineering situated at the Lovelock Campus, North of Adelaide.

The School is responsible for teaching a four year Bachelor of Engineering course and a two year Associate Diploma course with a total of approximately 200 students enrolled on campuses at Adelaide (Research) and Whyalla. The postgraduate areas has a small number of Masters (Research) students and can be developed further as the staff is actively engaged in research, consultancy and developing the School's undergraduate programme of Manufacturing, Design, Thermal Systems and Agricultural Engineering.

The South Australian Institute of Technology at The Levels has an extensive computer network linking VAX 750's and a VAX 880 of software. This is complemented by an array of PC and special purpose micro-computers. The School also has excellent laboratory facilities.

The successful appointee will have a distinguished record in at least one area of Mechanical Engineering, ideally both in an academic field and in recent industrial practice. He or she will participate in the development of the undergraduate and postgraduate programmes, as well as the promotion of the School's existing areas of expertise. A demonstrated ability to attract funds for applied research is highly desirable.

Conferment of the title Professor or Associate Professor will be judged upon the capacity for demonstrated academic leadership, including teaching, course development and applied research.

The Council of the South Australian Institute of Technology is currently reviewing its policy on appointments of Heads of School on a permanent basis and is considering a system of rotating its administrative responsibilities associated with headship. For its present, however, the successful appointee would be expected to assume the existing roles of both Professor/Associate Professor and Head of the School of Mechanical Engineering.

ANNUAL SALARY

At one of the following levels, according to qualifications and experience:

Level 3	Aust \$46,387
Level 4	\$1,185
Level 5	\$3,088
Level 6	\$4,948

Applications forms, Conditions of Service and further information on the position may be obtained from Ms. Victoria Thomas, Appointments Officer, South Australian Institute of Technology, North Terrace, Adelaide, South Australia, 5000, to whom applications, including the names and addresses of three referees should be forwarded by Thursday, 31st October, 1985.

REMINDER

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Overseas continued

NATIONAL UNIVERSITY OF
SINGAPORE
Department of Anaesthesia

Applications are invited for teaching appointments in the recently established Department of Anaesthesia. Candidates should have relevant higher professional qualifications in Anaesthesia, and preferably also teaching and research experience.

Gross annual emoluments range as follows:

Lecturer	\$530,680 - \$570,000
Senior Lecturer	\$557,590 - \$619,930
Associate Professor	\$589,300 - \$623,000

(STGE1 = \$52.94 approximately)

The commencing salary will depend on the candidate's qualifications, experience and the level of appointment offered. In addition, appointees with an approved basic medical degree and relevant higher academic/professional qualifications may opt to retain consultation fees up to 80% of their annual gross salary or to receive a fixed annual clinical allowance as follows:

Lecturer	\$56,000/8,000
Senior Lecturer	\$515,000
Associate Professor	\$521,000

Leave and medical benefits are provided. Under the University's Academic Staff Provident Fund Scheme, the staff member and the University are each required to contribute at the present rate of 25% of his salary, the contribution of the staff member and the University being subject to a maximum of \$81,500 per month and \$81,750 per month respectively. The sum standing to the staff member's credit in the Fund is tax-free and may be withdrawn when the staff member leaves Singapore/Malaysia permanently.

Depending on the type of contract offered, other benefits may include: a settling-in allowance of \$51,000 (single) or \$52,000 (married) subsidised housing at nominal rentals ranging from \$5100 to \$5218 p.m., education allowances for up to three children, subject to a maximum of \$10,000 per annum per child, passage assistance and baggage allowance for the transportation of personal effects to Singapore.

Application forms and further information on terms and conditions of service may be obtained from:

The Director Personnel Department National University of Singapore Kent Ridge Singapore 0511	NUS Overseas Office c/o Singapore High Commission in London 5 Cheapside Street London SW1 U.K. Tel: (01) 235 4562 (020604)
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Republic of Singapore
College of Physical Education

Lecturers

The College of Physical Education is the only tertiary institution in Singapore engaged in specialist teacher training for physical education. It is an autonomous body responsible to The Institute of Education Council.

The College is inviting applications from suitable qualified and experienced candidates for two Lectureship positions in the following areas: Biological Bases, Exercise Physiology, Biomechanics, Psychological and Sociological Aspects, Curriculum Development and Teaching Method.

The ability of candidates to contribute to the teaching of a variety of practical activities, some at an advanced level is also highly desirable.

General Requirements:

1. Applicants should hold a Master's degree and/or have a specialist qualification.
2. In addition to the above, applicants should hold teaching diplomas or certificates and have at least 3 years' approved teaching or related teaching experience and experience in teacher education is desirable.

Remuneration:

Approximate salary ranges, including National Wage Council (NWC) increases and housing allowance are as follows:

Single Officer:	\$42,378 p.a. - \$58,563 p.a.
Officer accompanied by spouse or child:	\$45,978 p.a. - \$59,183 p.a.
Officer accompanied by spouse and children:	\$49,578 p.a. - \$59,763 p.a.

Other Benefits:

Other benefits applicable to the Lectureship position include loan scheme for the purchase of cars, medical benefits, children's education allowance and ex-gratia payment where applicable, and a monthly contribution by the College of 25% of the officer's monthly salary plus education allowance towards The Central Provident Fund, subject to a maximum of \$1,750 per month. The Officer will also have to contribute 25% of his salary plus education allowance towards The Central Provident Fund, subject to a ceiling of \$1,250 per month. (The rates of contribution to The Central Provident Fund are subject to revision periodically.)

Application:

Candidates should submit a full curriculum vitae with qualifications, experience, personal details and the names of 3 referees together with their letter of application to Mr Alan Guy, Department of P.E. and Sports Science, Loughborough University of Technology, Loughborough, Leicestershire LE11 3TU.

Closing date for application: 5 September 1985.

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Industry and Commerce continued

Educational Designers
Central London

You have an opportunity to be a part of a dynamic education services practice in the London office of a leading international firm of accountants. In addition to the normal range of services to our clients, we now provide the systematic design and development of performance-based education on diverse business topics. This education is designed to meet the unique needs of each client, often employing such advanced systems as computer-based training (CBT) and interactive videodisc.

We need two designers to join our education services team:

Senior Educational Designer
- up to £18,000

As senior educational designer, you will report to the design manager. Your main responsibilities will be to monitor the design elements of individual education projects and to supervise design staff. You will also be expected to adapt courses to meet the needs of different countries and to contribute to the obtaining of new business. You will require an educational design and development background, and commercial/technical experience will be an advantage.

The successful candidate will be a graduate, aged between 25 and 30, who has a sound, working knowledge of education principles and approaches. He or she will have strong

supervisory, interpersonal and problem solving skills. Above all, he or she will be an effective communicator, both orally and in writing.

Educational Design Assistant
- up to £8,000

As educational design assistant, you will report to a senior educational designer. Your main responsibilities will be to work closely with our subject matter experts in drafting, reviewing and editing educational products.

The successful candidate for this position will be a recent graduate whom we will train in our methodologies. He or she will have strong writing skills and good graphic abilities.

Both designers will need to be high achievers, creative and capable of working effectively in a fast-paced team environment. They will work with top professionals from our offices worldwide and may well have the opportunity for foreign travel. Prospects for career advancement are excellent.

Positions are available immediately. Please write with your full curriculum vitae to:

Geoff May,
Arthur Andersen & Co.,
1 Surrey Street,
London WC2R 2PS.

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